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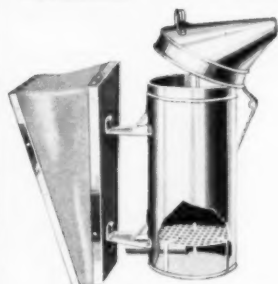
COMB HONEY: ITS PLACE IN
THE SUN—CHARLES MRAZ

MINOR SOURCES OF NECTAR
—EDGAR ABERNETHY

THE COST OF PRODUCING PACKAGES
—THOS. W. BURLESON

THE COMPOSITION AND VISCOSITY
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AMERICAN BEE JOURNAL

The Oldest Bee Journal in the English Language

ESTABLISHED BY SAMUEL WAGNER IN 1861

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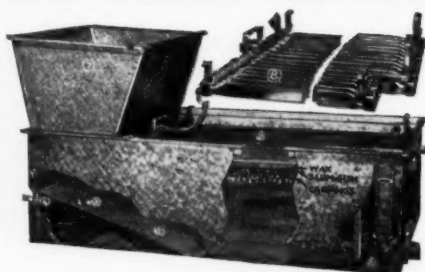
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American Bee Journal

Vol. LXXIX—No. 3

Hamilton, Illinois, March, 1939

Monthly, \$1.00 a year

Shall We Have Inspection of Honey?

A note comes to us concerning a complaint from the baking industry about the quality of certain honey they attempted to use. One of the larger baking companies has stopped using honey in its baking formulae. This is a serious matter, and it has occurred simply because a few beekeepers have not been careful to see that their honey was properly prepared for market. Of this particular lot, some of the honey was not strained properly; some of it was put into secondhand cans and it was difficult to remove particles from the tops of the used cans; some of it had an odor of carbolic acid, because proper care had not been exercised in removing the honey from the hives; some of it fermented, because the honey had not been properly ripened.

Because of these troubles, any one of which would be cause enough for complaint, this baking company has given up the use of honey. Should their experience become general, the beekeeper may easily lose the very large outlet which is at present provided by the baking industry for his product.

An occasional individual who is careless in handling a food product causes a lot of trouble for the entire industry. It was to overcome just such careless handling methods that the inspection of milk products was established. There are but few important markets for milk which now do not require inspection of the dairies from which it comes.

Every additional service which the public requires adds to the burdens of the food producer, but such complaints as that which this baking company has made are likely to lead to a demand for official inspection of all honey and of the conditions under which it is produced before it may be permitted to go to market. If self interest is not sufficient to induce proper care in the handling of food products, public interest compels food producers to submit their products to inspection and, at the same time, requires them to pay the cost.

—ABJ—

What About Sweet Clover

SINCE the early days of American beekeeping, sweet clover has been very much in the consciousness of the beekeeper. First there was the long agitation to gain its acceptance by the farmer, when the beekeeper was often accused of scattering weed seed if he planted it.

Then came the World War and the great demand for grains and the urgent need of a legume suited to the region of dry summers and cold winters of the northern plains. This brought sweet

According to Capper's Farmer for February, the three corn belt states, Iowa, Illinois and Indiana, in 1938, planted 2,742,000 less acres of corn than the four year average from 1929 to 1932. However, in 1938, Georgia, Alabama, Mississippi, Louisiana, Arkansas, North Carolina and South Carolina planted 3,232,000 more acres of corn than in the same four year average. The increase in corn acreage in the seven states mentioned is 490,000 acres greater than the decrease in the three corn belt states.

Now, will someone explain the sense of that? It does help diversify farming in the South, but it doesn't help the price of corn in the North, and those of us who don't buy corn directly must pay the farmers in the corn belt for not planting corn. We wonder when they will get to the honey producer and pay him for producing less honey from fewer colonies while our southern brothers by the same hand are induced to raise more bees to sell in the North. It would be just as paradoxical.

When bringing in old hives to the honey house, be very careful that there are no wax moths on the combs. I had the experience of carrying in old combs and hives that had been infected with *Braula coeca*, although I didn't realize at the time that the combs were diseased, because you can't see these eggs with the naked eye. After the honey was extracted from the frames, I scorched the hive, to keep American foulbrood away.

To give you an idea how this dread enemy multiplies, I will tell you what happened. A few weeks ago I went into my honey house to get ready to build hives for the next honey harvest. I always keep a small work table near the window for nailing up frames. I lifted up a paper that had some paint on it, and underneath the paper was a whole mass of wax moth larvae. The larvae were not only imbedded in the paper, but there were hundreds of the worms that had bored into the cracks of the table. I had a terrible time getting these worms out.

William R. Koenig,
Illinois.

In almost every state an effort is being made to encourage beekeeping, especially as a side line to farming, the idea being to increase the farmer's income and at the same time make it more secure by widening the income base. It would be hard to think of any activity commendable, on the face of it. But to increase his income the farmer must sell the honey, mustn't he? ... True, he might eat it but he won't, in any quantity as long as honey retails at a higher price than sugar. Only the veteran honey producer, hard boiled after years of stewing in the heat of competition for markets, can eat honey regularly in the place of sugar with an easy conscience. Check up on that if you want to and tell me if I'm wrong.

So, with a few cases of honey to sell and no established market for it, is it any wonder that the honest dollar that this farmer-beekeeper hoped he would make shrinks to a dime, or a penny, or even less, and at the same time knocks full-sized dollars out of the pockets of beekeepers who make honey production their chief business? It's doubtful that government could do anything effective to remedy this if it tried. Anyhow, the established honey producer has the remedy at hand. He has the organization and equipment for handling and packing honey, and the outlet for it. He won't make much money on handling his neighbor's crop. He may even lose on the deal. But after all, his bees forage on other men's fields. A benefit to the neighbor, yes, also an annoyance. It's a give-and-take business at best, and it behooves the beekeeper not to be too stingy with his giving.

Walter Hull,
North Carolina.

In more than thirty years of experience in cellar wintering, I have never known mice to enter the hives or to damage the combs while they were in the cellar, even though the hives had a $\frac{3}{8}$ -inch entrance opening. Bees seem to be able to protect their combs at temperatures above forty degrees. The rodents do not enter the hives when they remain outside the cellar as long as the bees are active.

E. S. Miller,
Indiana.

We have just learned of the death of Monsieur l'Abbe Pierre Metais, founder and administrator of the magazine "L'Apiculture Francaise."

Monsieur l'Abbe died December 22, 1938, at the age of 88. He had been granted the "Chevalier du Merite Agricole."

clover into its proper place in the farm rotation and was followed by its general use as a farm crop over a large area.

The coming of sweet clover to the North brought a new industry to that area. In the Dakotas and western Canada where it has been thought that beekeeping could never succeed, sprang up some of the world's largest apiaries. The large scale development of commercial honey production of recent years has largely been in the region where sweet clover has found its greatest acreage expansion. Prior to the coming of sweet clover, apiaries of five hundred colonies were rare in the mid-continent area but soon anything less than that was regarded as a small outfit.

Recently there have been disquieting reports of the failure of sweet clover in a neighborhood here and there and always the question as to what might be the reason. Nobody seemed able to offer a satisfactory explanation why this plant which had grown so vigorously should suddenly refuse to prosper.

Recently some cooperative work between the University of Wisconsin and the Division of Farm Crops and Diseases of the United States Department of Agriculture has thrown some light on the matter. Dr. Fred R. Jones, of Madison, has found two types of disease to be present in some localities and these promise to spread.

"The first is caused by soil-inhabiting organisms which have increased with the repeated growing of the crop. One of these which appears to be the worst, causes decay of the roots in early spring, thinning or destroying stands that were good in the previous fall.

"The second type of disease is shown by blackening and stunting of stems in summer. Several fungi are concerned in this, and nearly all of them are found to be seed carried."

Already a start has been made toward the selection of disease resistant strains in the hope of finding a remedy before the damage has progressed too far.

In the last mail a letter came to this desk from Manitoba, where sweet clover has brought so much prosperity to the beekeeper and so great a change to the agriculture of the region. It states that the bee pasture is dwindling in that neighborhood and that farmers are seeking some plant to replace the sweet clover.

In view of the great stake which the beekeeping industry has in sweet clover, this problem appears to be of vital importance. It is fortunate that it is recognized by competent investigators, and they should receive every facility for completing their work.

—ABJ—

Honey on the Goodyear Hour

THOSE beekeepers who listened to the Goodyear farm program at 12:15 P. M., on January 31, must have been well pleased with the manner in which that company presented the merits of honey and bees through their guest speaker, Mrs. Harriet Grace, of the American Honey Institute. Mrs. Grace, in response to questions by the announcer, gave the public a surprising amount of information about bees and honey in a brief period of time.

There was no tendency to exaggeration as to the returns from bees or the merits of honey but plain statements of fact. After hearing this broadcast we should expect that many a housewife would be reminded to replenish her supply of honey.

German Bee Societies

ACCORDING to the Australasian Beekeeper, Germans to the number of 180,000 belong to beekeepers' societies in that country. It would seem that interest in organized action must be far greater there than is the case in America or other English speaking countries.

In view of our advantages in crop yield it is a bit surprising that we should make such a poor showing in comparison. The best information available here indicates that the average yield in Germany was twenty pounds per colony in 1932. No figures are available for later years. All reports indicate that average yields in Germany and other European countries are much below what they are in the United States and Canada.

To find 180,000 beekeepers holding membership in associations designed to serve a minor industry, such as honey production in such a relatively small area, is astonishing to us in view of the lack of interest in our association activities.

—ABJ—

Inborn Resistance to Disease

THE Scientific Monthly for January, 1939, contains a very interesting article, "Inborn Resistance to Infectious Disease," by Dr. Leslie T. Webster. In view of the study of resistance to disease in the honeybee this article should be of interest to many of our readers.

Dr. Webster is a member of the staff of the Rockefeller Institute for Medical Research and his article describes the results of some very valuable investigation. The facts now available indicate that it is possible to develop highly resistant strains of either plants or animals by proper selection.

The following paragraphs quoted from the article are significant:

"By experiments on some 500 individuals it was found that those succumbing early in epidemics actually bear progeny more susceptible than those which escape. Thus our assumption becomes established that individuals differ profoundly in their inherent resistance to a given infection."

"Continued inbreeding and selection have been practiced for fifteen generations until now lines of mice are at hand, generally indistinguishable except that one is 10,000 times more susceptible to a given infectious agent than the other."

We suggest a reading of this article by all who are interested in problems of disease resistance. The Scientific Monthly is published by Science Press, at Lancaster, Pennsylvania.

There is every indication that selective breeding offers the shortest route to successful disease control. The fact that almost complete immunity was established in fifteen generations indicates that it may be possible to overcome American foulbrood in our apiaries in a comparatively short time.

Dr. Webster has found that the level of resistance which is inherited can be altered by many environmental factors. This offers promise of eventually overcoming many of the plagues to which mankind as well as plants and animals are subject.

The fact that people lived and grew before cane sugar was known is often cited as evidence that they need no other sweet than honey. Forrest C. Mann (page 405, Sept. 1938) implies that they don't need very much honey, either.

He complains that "habit seems to be in control" of what people eat. That, when you get to the bottom of it, is just another way of saying that the body can adjust itself to a wide range of conditions, can exist and develop even when it lacks many things necessary to its highest development. Without this ability of the body to adapt unsuitable food to its needs the human race would surely have died of starvation long ago. True, it sometimes results in man's failure to use foods more exactly suited to his needs when such are available, and thus leads to what we call pernicious eating habits. But to complain of that fact is sorry gratitude to nature for those physical attributes which have enabled the human race to survive recurrent periods of hardship and famine throughout the ages.

Habit is in fact so powerful that whole nations may exist in a state of partial starvation for centuries without realizing their lack. Although there is little positive proof that the age of modern progress is the result of mankind being better fed, strong circumstantial evidence is found in the fact that this period of progress began with the discovery of new food products in America and has advanced with the increasing freedom of movement of food throughout the world.

Walter H. Hull,
North Carolina.

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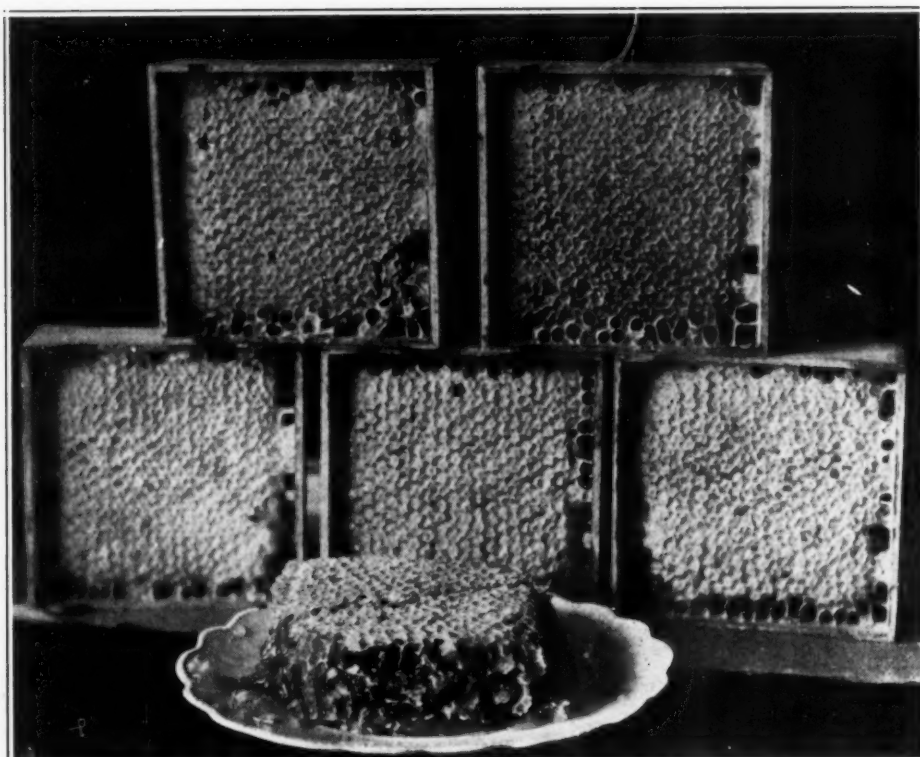
Sainfoin or esparcette (*Onobrychis sativa*), next to white Dutch or pasture clover, is regarded as the world's most important source of honey. It is widely grown in Europe and Asia and to a limited extent in Canada but has so far not succeeded in the United States.

In countries where sainfoin is generally grown as a forage crop it provides extensive bee pastures such as is found with alfalfa in America. Its addition to our farm crops would probably offer a substantial addition to our honey sources, since sainfoin blooms first between fruit bloom and white clover and offers a later bloom when there is little forage available in many sections.

◆

James Gwin, of the Wisconsin Department of Agriculture and Markets, has been named superintendent of the bee and honey department at the 1939 state fair to be held August 19-27, in West Allis.

H. C. Brunner,
Milwaukee.



For economic reasons, during the last twenty years, comb honey has been more and more replaced by extracted honey. Will comb honey keep its place as the finest product of the hive?



Comb Honey: Its Place in the Sun

By Charles Mraz,
Vermont.

Charles Mraz is apiary inspector for Vermont. He came out of New York, sick of the city, worked with that comb honey master, J. E. Crane, and now has his own large holdings in the Champlain Valley.

COMB honey is the art of beekeeping. It has been referred to with many worthy adjectives since man first sank his teeth into a juicy, dripping comb of honey. With commercial beekeeping, there is the economic side of comb honey's place under the sun as well as the romantic side. Since I am not of a poetic nature, it will be necessary for me to discuss the practical situation of comb honey as it stands at the present time.

We are located in the narrow strip of blue clay soil in northwestern Vermont known as the Champlain

Valley. What little commercial beekeeping we have in Vermont is in this valley. Since the early days of beekeeping this has been a comb honey country. Practically all the old beekeepers who have passed on and the few still living, produce only comb honey. It is ideally adapted to comb honey here in the valley as we usually get a short intense flow of white honey between the middle of June and middle of July. After the short clover flow, we get practically no honey, feeling fortunate if bees live until fall feeding without starving. The short fast flow and

absence of any great amount of dark honey, makes it possible to produce well filled, clean, white sections of honey that are really a thing of beauty. The older beekeepers have grown into producing comb honey for so long, it is impossible and contrary to their nature to produce extracted honey.

For the last 20 years, section comb honey is being more and more replaced by extracted honey. The reason is economic, especially on the part of the beekeeper. More money can be made with extracted honey selling at 7 cents a pound than with

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comb honey selling at 15 cents a section. This is true here in good comb honey country and is undoubtedly true in most other sections. There are two main reasons for this: first in producing extracted honey, one beekeeper with a little help can easily take care of 600 colonies of bees, but in producing comb honey, a man needs plenty of help to take care of 400 colonies. Second reason, a hive of bees will produce almost twice the amount of extracted honey as comb sections. Other items to add to the cost of producing section comb honey such as the cost and labor of putting up sections, cleaning sections, cost of packing and shipping and loss of unfinished sections. On the part of the distributor, he has the trouble of broken combs and crystallization on top of the small profit attached to selling comb honey. All in all, section comb honey has been working under a serious handicap in competition with extracted honey. Regardless of all handicaps, section comb honey will always be produced to a certain extent as many people will use section comb honey and nothing else.

In 1937, after several years of surplus and low prices, comb honey was very scarce over most of the country especially in the East. In 1938 many beekeepers dusted off their comb honey supers to produce comb honey in response to the strong demand in 1937. Together with a bumper crop in many sections, the markets in the East, especially in New York City, was flooded with comb honey resulting in weak market and low price. There is no question but that many beekeepers will put their comb honey supers in "moth balls" again and section comb honey will have a smaller place under the sun in 1939. I believe section comb honey will more and more have to depend on its romantic value in the market. There was a time when I debated the question, "Shall I produce more comb honey?" The answer for the past several years is NO. With 600 colonies, I produce less than 300 cases of comb honey a season, just enough to help sell the extracted honey. The only time I'll increase comb honey production is a certain market at 20 cents a section. Another comb honey pack which we do not do much with in the North is bulk comb honey packed in tin or glass. Its main objection here is that the honey quickly crystallizes and spoils its appearance. In warmer climates and with certain honey, it is a standard method packing. I have in mind the delicious sourwood honey of the Southeast packed in this way. Sourwood honey would certainly not taste the same packed in any other way.

Lately, there has been sort of an experimental splurge in cut honey

production. Cut honey, of course, is an old story. For years beekeepers have cut up shallow combs, drained them by gravity and packed the cut pieces in paraffin paper. In all cases time and labor in draining the edges and unattractive appearance of wet, sticky or crystallized package prevented cut honey from being practical. I have been one of those experimenting with cut honey the past two years and believe cut honey has possibilities in regaining some of comb honey's place under the sun. Two things that make this possible are moisture proof cellophane and the centrifugal method of draining the edges.

To produce cut comb honey in shallow supers requires but very little more work than extracted honey as far as taking care of the bees go. Cut honey can be cut, drained and wrapped with no more effort than that required to scrape wood comb honey sections. It is a long way, however from ever replacing extracted honey. A beekeeper accustomed to "slam banging" honey out by the ton in an extractor,

would not get very far fussing with cut comb. It requires lots of careful handling, a fine detail work to put up an attractive package of cut comb honey. Cut honey is also limited to sections where white honey is produced as in the Northeast. White honey does not crystallize so readily as does the darker honey.

Though the production of cut honey is economically possible with the right beekeepers in the right sections, its biggest drawback at present is the market. It is something new to most people and a market has yet to be developed for it. This will take lots of time and missionary work but may help to put comb honey in a more prominent place on the consumer's table. No one ever tires of admiring the delicate intricate structure of a comb of honey or eating of its "flavor sealed" sweetness. Comb honey will certainly find a more prominent place under the sun when beekeepers will produce enough of it at a price the consumers are willing to pay. That is our job.

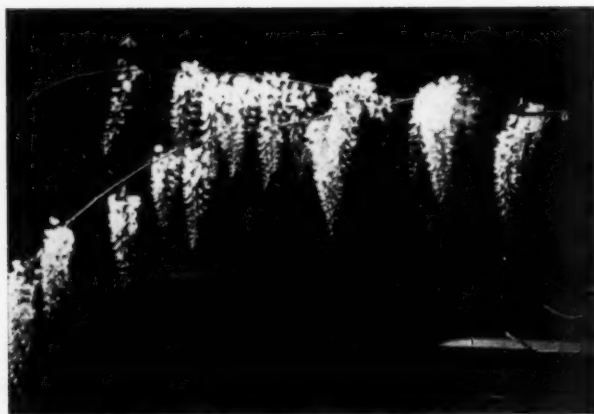
—ABI—

Ready To Go



This picture was sent us by Leroy Baxter, of Blair, Nebraska, showing bees ready to take off for a distant location at the beginning of the honeyflow. Many beekeepers have had to do this in recent years. In fact, it is becoming an annual practice. We used to think that migration of bees from crop to crop was confined to the western states, particularly to California. It is now becoming the practice of beekeepers throughout the sweet clover belt.

It is a real job bringing bees up to the pink of condition and then moving them to a distant pasture, getting all the honey home and the bees back too. When colonies number hundreds, it is no child's play. Mr. Baxter says, "We move 120 colonies, single story, this way and we can also load 245 supers at one time. The four at the truck are myself near the front; then my son; then Mr. Grobe, who works for me; and last, Chris Larsen of Webb, Iowa."



Minor Sources Of Nectar

By Edgar Abernethy,
North Carolina.

Minor sources often make a location. Lack of them turns the best of flows from a major plant into a disappointing crop because colonies cannot build up to it. In Abernethy's location he lists wisteria as an important minor nectar source.

WISTERIA blossoms seem always to be attractive to bees. Not only are they eagerly visited by honeybees, but they seem even more attractive to bumblebees, which often congregate about the vines in such numbers that the honeybees are virtually crowded out, or, perhaps, intimidated by the incessant noisy buzzing kept up by the hovering bumblebees. No doubt all beekeepers located wherever this gorgeous ornamental vine is grown have noticed this, but how many know that the wisteria is also a source of extra-floral nectar?

When I first stepped out of doors one bright morning in mid-April, 1938, to my ears came the loud hum of bees. A small black gum tree nearby was in bloom at the time, and my first thought was that it must be the source of the sound. Examination disclosed only a bee or two visible about it, however, so I decided that the noise must be coming from my apiary. As I walked toward it to investigate, I passed near a wisteria vine which clambers over several oaks in my side yard. This vine proved to be the source of the humming. It was a week or ten days past the blooming stage; here and there a small seed pod appeared, and the leaves were about half grown. These small leaves were being eagerly visited by a host of bees, which paused hardly an instant in their activity, passing rapidly from leaf to leaf.

I grasped a branch, and up I went. At close range the cause of the bees' excitement was easy to find. Upon many leaves of a certain stage of growth, about $\frac{3}{4}$ to $1\frac{1}{2}$ inches long—possibly upon all which had not already been visited by bees—glistened, near the base of the leaf, a tiny droplet of nectar. I touched my tongue to one of these; it was quite sweet to the taste. No evidence of aphides was to be found, I am positive that the nectar exuded directly from the leaves.

As I watched, I had the satisfaction of observing a bee suck up a drop. It was done with extreme rapidity;

barely pausing in its quest, the bee extended its tongue and, presto! the nectar was gone, and so was the bee, on its way to the next leaf.

Evidently the nectar supply was soon exhausted, for I soon noticed the bees busy in a chestnut oak tree near by, gathering pollen from its blooms, and the next time I passed the wisteria vine, not a bee was to be seen.

The next day was rainy, and after the weather cleared up, I observed very few bees about the vine. A few days later I found a drop of nectar here and there, with hardly a bee about. This is the only occasion I have ever observed bees visiting wisteria vines when they were not blooming.

I have also found that oaks occasionally yield nectar. Often I have noticed bees at work in them at times when no honeydew was present. Once I found bees visiting small white oak



The honeysuckle (above) seldom figures as a minor source, but occasionally it is visited freely by honeybees. The post oaks (right) also occasionally yield nectar from the tiny acorns.

acorns, but, as I could not detect any nectar, I was unable to ascertain whether they were collecting nectar or propolis. Last spring, however, I definitely identified nectar being gathered from post oaks.

By my father's house stands an immense post oak. Early in May, for several days it was full of bees, collecting nectar from the tiny acorns, which were then about the size of No. 4 shot; on the end of one here and there I found a drop of nectar, rather thick, and perceptibly sweet to the taste.

At the same time, I noticed bees about other post oaks, but many trees of this species were unvisited. Why some yielded nectar, and others, apparently, did not, I am unable to state.

What southern beekeeper has failed to wish that the ubiquitous pine was of some value to his bees? I have never known of but one case in which it yielded anything, and even then it was of doubtful value. Early in April, 1937, our pines were afflicted by a plague of black aphides. These pests did not seem to damage the



trees, though the only indication of their presence was a profuse secretion of honeydew, which matted the needles together and dripped off upon the ground. This continued for something like two weeks. For some unexplained reason, I observed very few bees working on this honeydew, and my bees made no gain from it. A beekeeper living a few miles distant stated that he averaged a shallow super from this source. "But," said he, "I don't know what I'll do with it, for it's not fit to eat."

Our ordinary honeysuckle, which grows wild here by the acre, is seldom of value, as the corolla tubes are too deep for honeybees to reach the nectar. Yet, there are occasions when it is visited freely by honeybees. After a light shower which left the blossoms standing full, I have seen it covered with honeybees, gathering the diluted nectar. And throughout its blooming period the past season, even though other plants,

of supposedly greater value, were blooming at the same time, there were always a few bees working upon it. They were visiting undamaged blossoms, too; I particularly noted that. What nectar they obtained they reached from the top of the blossom, and they must have been getting some or they would not have continued to work at it. Perhaps nectar stood higher in the corolla tubes than usual this past season.

All of these sources which I have discussed are decidedly minor ones, and possibly no one of them is ever of much value. Yet, in the aggregate, I am convinced that minor sources are of more importance than we sometimes think. I have no doubt that they frequently have a decided effect upon the amount of our net crop. No beekeeper can afford to neglect the study of these, or of any other details, no matter how small, which are connected with his business.

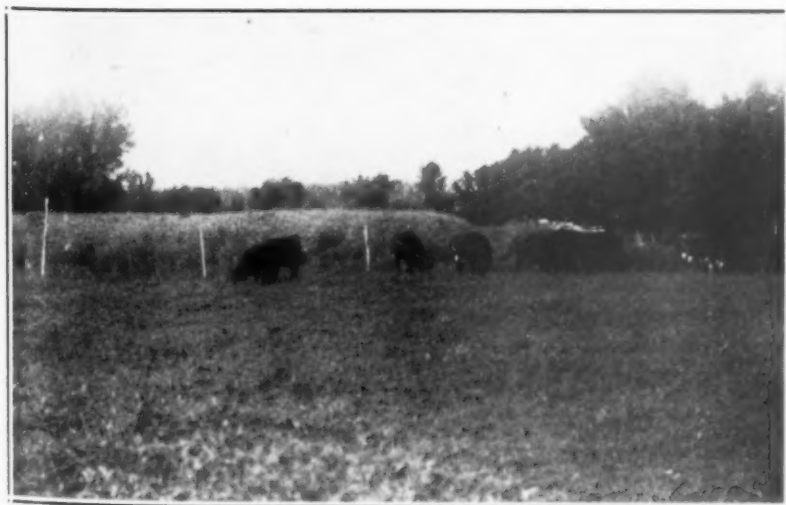
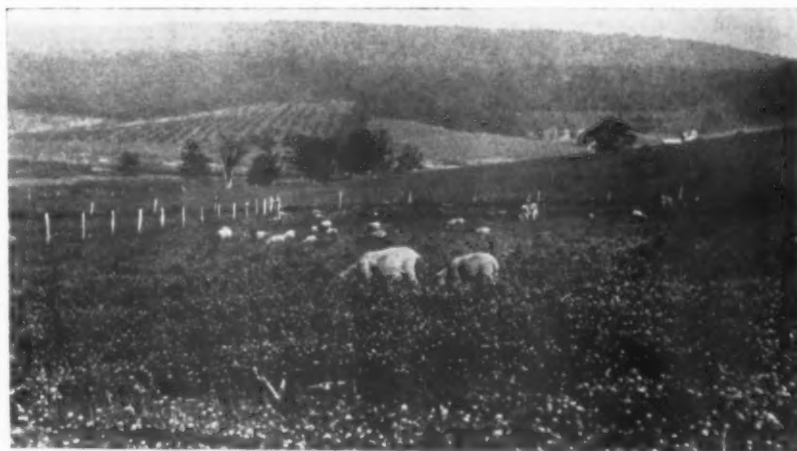
—ABJ—

Our Cover Picture

The subject of red clover and the bees has long been of interest to the beekeeper but of late is beginning to interest the farmer as well. In the old days when there were plenty of bumblebees the farmer had little concern since he secured an abundant supply of seed. The beekeeper looked upon the large fields of red clover and regretted that his bees were unable to get the nectar because the flower tubes were deeper than the reach of the tongues of these insects.

As the midwest farm area became more intensively cultivated the number of bumblebees was gradually reduced until the farmer no longer was able to secure a satisfactory crop of seed from red clover. The yields became smaller and smaller and the price higher and higher, until red clover all but disappeared from many farm neighborhoods.

Since a single clover head may contain a hundred or more individual



flowers, a forty acre field of this crop requires many insects to distribute the pollen to insure a set of seed, and at the same time so much pasture offers a large potential source of honey.

Red clover refuses to set seed from its own pollen but requires that pollen be brought from the flowers of another plant to secure fertilization. To insure a full set of seed the bees must visit every one of the 100 or more flowers in each head and the few bumblebees now to be found on midwest farms are entirely inadequate to do a proper job.

Fortunately, the honeybee can pollinate red clover if she can be induced to visit the blossoms and often she will do that in search of pollen even though she cannot get the nectar. Reports are coming in that yields of red clover seed are much better in neighborhoods where there are large apiaries, even though the beekeepers in those localities are unable to see increase in the honey crops as a result.

Dr. J. N. Martin, of Iowa State College of Agriculture, states that a full crop of red clover seed should be about twelve bushels per acre. Less than that amount indicates

lack of complete pollination of the blossoms. Such crops are harvested in western localities where there are plenty of bumblebees or where the honeybees do not find a counter attraction in some other plant blooming at the same time.

The disappearance of the bumblebees in so many localities is offering a serious problem to many farmers who would not otherwise have any interest in the honeybee. Dr. Martin has called attention to the fact that to insure success of the soil con-

Wherever grazing herds dot the farms, with lush clovers about their knees, you will find beekeeping a dependable occupation and farmers prosperous. Each needs the other. Some farmers see how important the bee is to them but the story must be told and retold, proved and reproved, to make the application complete.

servation program will require a million hives of bees to fertilize the clover blossoms on the farms of Iowa. To render a similar service to all, the farms of the red clover belt will need a very large increase in the honeybee population.

So many farmers have built their crop rotation around this plant, that red clover pollination becomes a major farm problem in the Midwest. Many are trying other legumes under protest and with regret but still live in hope of again growing red clover

as of old. Whether they will be able to do so now seems to depend upon the honeybees.

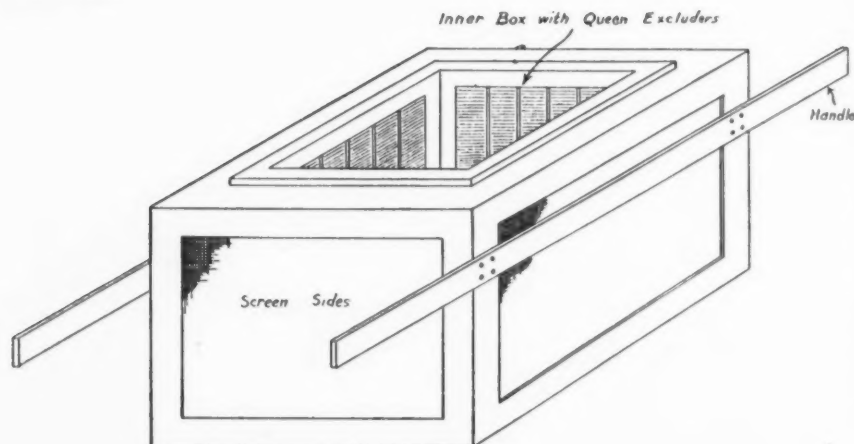
If there are plenty of honeybees in the vicinity of their fields and these bees visit the flowers freely at the proper time there will be plenty of seed. If the bees refuse the attraction of the clover blossoms in preference to something else or if there are no bees present, the farmer must grow some other crop or buy his seed elsewhere.

—ABJ—

Queens for Package Bees

By Hy. W. Sanders,

Manitoba.



With this shaking box it is possible to get a majority of young, long-lived bees for the package, bees that will readily accept and respect their new queen.

IN the January issue of the American Bee Journal, George H. Rea, of New York, discusses package bees and among other things writes as follows: "A strange queen, placed in a cage and shipped among a lot of strange, hostile bees cannot be expected to receive favorable attention on the part of the bees for at least several hours... the bees often ball the cage... a mass of furious bees which is still active and hostile when the package reaches its destination... Bees which once reject a queen will usually replace her after she has laid a few eggs, even after the beekeeper has practically compelled the bees to accept her... the answer would be to ship the package bees with their own queen loose among the bees."

Our experience indicates that a lot depends, in this connection, on the methods used in shipping. For several years we have been going south for

our annual truckload of packages and we have had better results each season in the matter of queen introduction and superseding. We think that the shaking apparatus used by our breeder is an important factor in this, because it practically insures getting young bees, and young bees do not attack queens as older ones do. The shaker is a large box, perhaps three feet square, with panels of screen wire on all four sides. Into the center of the open top slides a smaller receptacle consisting of queen excluders, sides and floor. The shaker is carried on handles between two men, like a stretcher.

It is moved about in the yard, and the workers take combs from hives and shake the bees into it. Field bees immediately fly out of the open top of the apparatus, and drones and queens are trapped by the excluders and can be removed. The young bees however go through the excluders

and cluster in masses on the inside of the screened sides. When a quantity is thus accumulated the inner container is lifted out and the bees dipped out with a measure and placed in the shipping cages. When the trucks return to the warehouse the bees are first wetted, then fed by pouring heavy syrup through the cage. Finally the caged queen and feed can are added and the package is ready to ship.

I have watched and helped with these processes, and I am absolutely sure that with this method there is no attack on the caged queen. Not only are the bees practically all young ones, but the fact that they are kept queenless for several hours until the truck reaches headquarters, then wetted and fed, puts them into so docile a state that I believe they would accept new queens if given uncaged, although I have never tried any such thing. The point is that they are demoralized to a point where their normal attacking instincts are overcome.

Of course we have a long drive back to Canada, and the queen remains caged with the bees at least two days longer than with short shipments, such as those to New York state which Mr. Rea handles. This brings the thought that perhaps in his case if the bees are in good condition it might do no harm to feed them on arrival and leave them a day or two in a cool cellar before hiving.

What he says about the bees having their own queen corresponds with our experiences. Occasionally, before our package bees were shipped by the above method, we would find the caged queen dead, and in many cases the reason was that there was a queen loose among the bees from the shaken hive. In nearly all these cases there was no superseding and the bees prospered. Some of our neighbors have reported the same thing and one (Mr. Pink) has been trying to buy package bees with their own queens. Unfortunately those he got last year were not kept separate but got mixed with the others in moving to the yards, but he thinks that they were one hundred per cent successful.

Of course, the obvious difficulty with this idea lies in the shipping yards. Colonies are often shaken two or three times, and to take the queen would involve introducing a new one at a difficult time, as well as an interval in egg production at a time when every day counts. To sell package bees thus would necessitate considerably higher prices.

The Cost of Producing A Package of Bees

By Thos. W. Burleson,
Texas.

IN discussing this subject, I am taking my location, interest, taxes, depreciation on equipment and trucks, cost of material, labor and other things into consideration, and the figures cover a period of five years for the reason that over this period of time the cost of material, labor, weather and so forth may vary. Let me say that most beekeepers are like other people in many respects; that is, they do not keep a complete record of the cost of operating. For this reason, some wake up; but too late, and find that they are broke. The successful man in any kind of a business keeps a complete record of all phases of his business and is able to know wherein his losses are. For many years I have kept a complete record of my operations and in this way I know what it costs me to produce honey and bees.

The only way I can arrive at the cost of a package of bees is to tell you my cost of production and marketing. The following figures are based on a two-pound package of bees without queen:

| | |
|---|--------|
| Cost of cages with feed can | \$.35 |
| Feed for bees 1 1/3 lbs. sugar | .07 |
| Crating material and nails | .02 |
| Labor, gas, oil, depreciation on trucks, etc. | .16 |

| | |
|--|-----|
| Clerical work, stationery, postage | .04 |
| Advertising | .05 |
| Replacement | .04 |
| Honey to produce bees 15 lbs. at 5 cents | .75 |
| Interest on investment | .06 |
| Depreciation | .04 |
| Taxes | .02 |

Total\$1.60

The cost of producing and selling queens is not figured herein as we have all our queens reared by specialists in queen-rearing, but figures received from some of the most reliable queen breeders tell us that if a complete cost account is kept, they find it costs, over 5-year period, not less than 50c up to 70c each.

Fortunately for me I have never sold many bees through dealers giving the 15% discount. Taking the price adopted by the shippers under the Marketing Agreement for 1938 of \$1.70 for a two pound package without queen, a shipper selling through a dealer allowing the 15% discount would only receive \$1.44½ per package showing an actual loss of 15½c on each package. You might question the cost of some of these items. Say some of my labor is not 15c per package; that might be so if the weather is favorable, but let us remember that some springs



Bessonet, from the Garon yards, loads out a big truck for the North. The desire for quality bees at a low price brings many northern trucks south every year. But the northern buyer should remember that quality and cheapness are not one and the same thing.



Tom Burleson and his son produce and ship bees and queens and pack and distribute honey. They should know costs and what it takes to make a profit.

it rains most of the shipping season, and also remember where your customer specifies that his order is to go out on a certain date, he wants it at that time and not a week later. So regardless of the cost to me to get out the orders, they must go at the time specified.

Some of you may say that the charges for honey to rear two pounds of bees is too much. Let me tell you, it takes this amount of honey to rear two pounds of bees. Regardless of whether it goes to rear bees or make up a 60 lb. can of honey for the market, this is your honey produced by your bees and you are entitled to collect for it.

The figures above given represent the actual cost to me. I may have to pay more for material than some; nevertheless, I find that if first-class, light-weight material is not used, the loss to both customer and myself will be sufficient to overcome the advantages gained in cheap, heavy material. Also I find that it pays to use the best labor, workmen who know how to cage, feed and care for a package of bees.

Let me suggest that all beekeepers keep an accurate amount of the actual cost of their business operations, including their own wages, depreciation on equipment, trucks, etc. and if this is done, there will not be so much trouble with price cutting.

Intelligent management and hard work will enable us to at least provide for those we love and make us respectable in the community in which we reside.

Department of Beekeeping, West of Scotland Agricultural College

By Joseph Tinsley,

Lecturer in Beekeeping

MANY hundreds of students from all parts of the world have passed through a course of instruction at this beekeeping college and its influence is widely felt. It stands unique as the most up-to-date educational institution of its kind in Great Britain. The enormous increase of beekeepers in Scotland as revealed by the last census can be attributed to some extent by the part this department has played, but the greatest benefit has been felt by the ten counties in the southwest of Scotland. The college is situated in the County of Ayrshire which has always been famed for its beekeepers. The town of Stewarton, a few miles away, was the home of the inventor of the Stewarton hive. Undoubtedly the cream of Scottish beekeepers reside in Ayrshire, and it is only natural that they should be in possession of such a wonderfully fine institution.

The apiary buildings have been equipped in the most modern manner, so that the Department of Beekeeping is in a unique position to train students, investigate bee problems, and give the greatest amount of

assistance to the beekeeping industry. The buildings provide lecture room accommodation for fifty students, honey extraction room with special

plant, storeroom, and joiner's workroom.

The lecture room, in addition to the usual equipment contains glass



Upper picture, shows Mr. Tinsley (left), with assistant, Mr. Livingstone, clipping a queen's wings, an excellent exposition of a bit of common practice. Below, is the West of Scotland Agricultural College Apiary, a neatly laid out yard, with bees satisfactorily far apart.

observation hives, giving a full view of the working of colonies of bees, and display cabinets containing illustrations of bee diseases and of the anatomy and physiology of the honeybee, as well as exhibits of honey, wax, and pollen.

The extracting room contains modern power honey extractors, sieves, honey ripeners, honey presses, wax melters and honey bottling plant.

Joinery and store rooms provide accommodation for practical instruction of students in preparing hives for honey production and the making of hives and appliances.

The apiary, consisting of over one hundred colonies of bees is situated in a four acre field, which surrounds the apiary buildings, and adjoins the mansion house. The field which has a

pleasing southern exposure, has been converted into a lawn, and round its edge various shrubs and bee flowers have been planted.

The colonies of bees consist of several strains but the predominant race is the old Scotch variety which has been bred from carefully selected strains obtained from all parts of Scotland. Various types of hives are included so that their relative merits may be demonstrated.

—ABJ—

My Opinion of Caucasians

When Frank Benton introduced Caucasians bees to this country, I gave them a severe test and found

them superior to the Italians in several respects. I still use them. The most severe test occurred during the great drought in the South. They survived in spite of everything that happened, and at the end I was still in the bee business.

I could write pages on their behavior during this time when there was no water, no nectar and a great cloud of smoke from forest fires that stayed close to the face of the earth when it seemed so dense that a bee wouldn't dare out of the hive; but the Caucasians did come out. They reduced to small clusters, yet they protected their comb from moth. When they finally had a chance to gather pollen and nectar, it is surprising how they overcame their trouble.

I notice once in a while that objections are raised to Caucasians because they are so much like black bees, especially since the crosses with black bees cannot be distinguished from them. We never look for color. Their movements and their behavior tell the story. They are gentle. The crosses with black bees are never gentle and are nervous making it easy to distinguish them.

Another objection fired at this race is that their queens are hard to find. In looking for the queen, do not look straight at the comb, but give it a glancing examination, holding the comb at an angle of about fifteen degrees. Take a peep from the underside too, and the queen is located readily if she is on the comb. Her back is dark like her bees, but the side view is different. It is a pronounced copper color which distinguishes her readily.

J. J. Wilder,
Georgia.



Above, Messrs. Tinsley and Livingstone examine an old-fashioned skep of bees. Skeps are still of interest and often used successfully in heather honey management. Below, girl students, at the college, disdainful of veils, examine a colony of bees.





Here goes the plane, away in the blue to spread a death laden cloud of arsenic over unrestricted broad acres in the modern attempt to accomplish much with the least effort. It's a hard program on beekeepers whose interests are seldom considered.

Mr. Robinson Asks About Airplane Dusting

DR. J. E. Eckert, of the University of California, sends a letter from Bryan A. Robinson, of Holland, Texas, in which Mr. Robinson says, "I have your booklet 'Relation of Airplane Dusting to Beekeeping,' and I am glad to get it. It takes the subject to the finish without missing vital points. I live in Bell County, Texas, a great cotton producing section, where we have an annual siege of calcium arsenate applied in two ways, some farmers using dust and others spray. It kills field bees, young bees in the hive, the larvae suffering the worst. The colonies are not able to shed the poison pollen and the weakness continues for months, killing 90 per cent of the colonies entirely.

"The only way I see to help a colony is to move it to a clean place and exchange it with a strong hive. The addition of brood helps very little. I maintain 300 colonies in the hilly country away from the poison so I may use them for helping poisoned colonies should I have any. That is expensive. The location is 50 miles from home.

"A farmer friend who produces his own honey, in 1937, lost all thirteen of his colonies. I asked him how the poison affected him and he said he saved his bees in the following way: He built a cage for each hive of screen wire, making the top and back of ply board, the cage being three feet each way. Outside the hive, he placed a pan of water with floating chips to prevent bees drown-

ing. The bees were kept in the cage about three days. He says the calcium arsenate loses its strength after two days. He learned this from a friend in South Texas who advised a man with cows in a field of poisoned cotton to take them away before they were killed. The man said there was no danger because the poison was two days old. Can you beat that one?

"It might be advantageous to close the hives during the poison period. I had in mind to put an empty super with wire screen top on the hive after placing a pan of water in the center of the hive, allowing an inch of air space between the screen and cover, leaving the entrance closed. This would be easier than moving 300 colonies fifty miles and missing the honeyflow.

"The cotton plant produces a strong flow for about fifteen days in mid-summer, and then tapers down to a slow, steady flow the rest of the year until frost kills it.

"I would like to know what kind of ventilation to allow the closed hives, how long to keep them closed, and what provision is made for bees that die of old age, room for excrement, the temperature, how the colonies react after opening, and the danger from suffocation. The answers to these questions will be of great value to beekeepers in the dusting area."

Answer—by Dr. Eckert.

1. In the third paragraph of your letter you state that the impression exists that calcium arsenate loses its

strength after three days. This is not so. The metallic poisons remain effective as long as they are on the plant or in the soil. The effect on bees will be minimized after the blossoms have been sprayed have dropped from the plant, or after a majority of the dust has been shaken from the plants by wind. The cotton blossom is only "open" a day or a portion of two days at the most, and then closes and dries up. The extra floral nectaries of the cotton plant from which bees get much of their nectar would probably contain little poison a few days after the application. Incidentally, a cow can eat considerable arsenic without being killed, but its general physical condition will be affected, resulting in the loss of weight, milk supply and appetite.

2. Our temperatures ranged quite high during the periods of application. We found that colonies could not be kept closed during the entire day, especially those without shade. The entrances and tops were closed with moving screens. Since some of the hives invariably leaked bees, the full effectiveness of this method was not obtained. The bees gathered a majority of the pollen during the early morning hours, so some relief would be secured if the colonies were closed only until 10:00 or 11:00 o'clock in the morning.

3. Some of the old bees died in the hive, but this was not serious unless the bees had secured some poison previous to the closing.

4. Hives were not stained due to the inability of the bees to take cleansing flights, since the hives were opened at the close of day and left open until just before daylight.

5. We did not try to keep hives closed during the hottest weather, believing suffocation would result. Our temperatures sometimes go over the 100 mark, at which time the humidity is exceptionally low. Night temperatures often drop to 60° with a refreshing breeze from the southwest.

6. The confined bees, of course, rushed out of the hives after being confined, but no losses were noticed.

7. We watched our hives closely to prevent suffocation, releasing the bees when necessary, even though they were injured later by poison.

Frankly, I doubt if it is feasible to close hives completely during the heat of the day on permanent locations. You might be able to do it in large cages with shade over the top, but these cages would cost more than the expense of moving. I believe too that all pollen combs in hives noticeably reduced in strength by poisoning should be soaked in water for 48 hours and then dried

before returning to the bees. This causes the pollen to shrink away from the cell walls and the pollen is so unattractive to the bees that they will carry it out of the hive without further injury to the brood or nurse bees. This is expensive in time and labor, and yet the practice will prevent the gradual strength of the colony from being lost over a period of time. I see no advantage of giving these combs containing poisoned pollen to strong colonies. It simply reduces their strength and impairs their producing ability.

The only answer to this poisoning problem is the enforcement of sensible regulations that will permit the farmer to control his injurious insects without injuring other allied agricultural industries or interfering with the liberties of others through promiscuous broadcasting of poisons. In the cotton area, the problem will be complicated by the fact that the bees work on the treated plants, as well as on other plants over which the drifting poisons are deposited whenever the airplane or blower type of applicator is used. More efficient application of poisonous materials may be effected so as to give the farmer greater control when the

poisons are applied and reduce the hazards to bees and livestock by limiting applications to those fields in which damage can be demonstrated.

Beekeepers living in the danger zone should cooperate at all times with their county agricultural agent who should be informed when poisonous applications are to be made sufficiently in advance to notify those who may be adversely affected by such applications. The limiting of the methods of application to those that will confine the poisons to the fields treated will further reduce the injury to bees, poultry and livestock. No applications should be permitted in diversified agricultural areas by means that will cause or permit poisons to drift over pastures, fields or gardens. Such cooperative contacts call for cooperation among beekeepers and this can be secured most efficiently through county, state and national organizations. The individual beekeeper can do little to protect himself against this menace, but the combined efforts of a group, working with other county or state organizations, can do much to control or regulate destructive practices in any community.

—ABJ—

Choosing and Keeping an Apiary Site

By Frank F. Johnson,

Wisconsin.

LIKE sowing your seed in the fertile soil, when harvest time comes, you will be rewarded manifold. Just so will the little gifts of honey we distribute about, especially if we see that the larder of our landowner, from whom we rent our apiary site from is replenished now and then. A little gift of honey occasionally will gain his good will, and the good will of the apiary site owner is the best friendship a beekeeper can have, and it should not be abused.

He will be glad to do these things which cause us some anxiety, such as hiving swarms if he is able, or at least reporting them. With his help, theft and pilfering the hives or honey house will be kept at a minimum, he will also curtail interference by cattle and other small duties that come up while we are absent.

There can be no fixed price for the rental of an apiary site; prices may vary from nothing to probably fifty dollars per year, depending entirely on conveniences, locality, how bad the renter wants it and the interest

the landowner may have in bees. Bees located in orchards should usually pay their own rent if the orchardist knows the value of bees

as pollinators of fruit. An apiary site with conveniences such as good roads at any time of the year, handy to water, adequate shade, high ground



Paired colonies, widely separated; rows well apart; trees for shade on all sides; sunny, warm, winter should go well with these bees. If water is handy on this level grassy floor, the beekeeper can ask little else in his location.

fenced from cattle near railroad or truck station is worth a good deal more than just a place to set your bees. With those conveniences and the good will of the owner, you will have an ideal spot. In most cases the beekeeper will have to erect his own fences and buildings, if one is to be used for storage or extracting at the apiary.

In selecting apiary sites, the farmer should know as well as the beekeeper, the danger of placing bees near where horses are worked and he should be informed of this. The beekeeper should have a definite understanding about the rent; do not weave your contracts too loosely. Men of the soil are usually honest, but being misunderstood is mostly our fault for not explaining in detail.

Paying with honey in lieu of cash for the apiary site is the best method. If the owner can not use as much honey as the rental would amount to, a part of the rent can be paid in this way. It would mean that much honey sold, and as there is nearly always an expense to selling, this sale will show a saving.

Farmers, like most beekeepers, are more or less nature lovers or they would not have selected farming as their vocation, and because of this, his family may be consumers of natural products, such as honey. The farmer

is usually enthusiastic about the crops produced on his land, and will, if properly cared for, boost your product to his friends and neighbors.

If the farmer operates a roadside stand, your honey can be sold there, allowing the farmer the usual commission, and if the bees can be seen from the stand or road, many sales will be made for that reason;—seeing is believing with most folks. Your honey should be put up in clean and attractive containers, and should be of the same high quality that you furnish your regular customers. The farmer in selling your honey will have to take the complaints or compliments. He undoubtedly has built up his roadside business on honest goods, and will expect your product to be the same. He should have the advantage of disposing of his honey first (that which has been paid him as rent, if such was the case).

Interest yourself in the landowner's work and crops, and he will take an interest in yours, and by lending a hand to some task the favor will surely be returned in some way or another. The writer has found that a dispute or an argument can ordinarily be settled with the aid of a third party who has shown no partiality to either. No such disputes should occur if agreements are made in the beginning.

—ABJ—

"Wild Bees" Again

By Hy. W. Sanders,

Manitoba.

IN the February issue, 1938 A. L. Hunt writes under the caption "What is the Matter with Modern Bee Culture," and asks; "Is it possible, or even probable, that the wild bee has developed a trait that gives an immunity to foulbrood." This by way of comment on a bee hunter who had found as many as ten colonies of bees in a half day, yet had never found a colony of wild bees with foulbrood.

Is it not possible that the fact cited can be explained in a much simpler way, namely that the wild colony that gets infected soon dies? I have never yet seen any research report as to how long a colony will live after it has become diseased. Inspectors say that where they find apiaries with disease in an advanced form, the colonies are already becoming weak through the cutting off of supply of young bees. In these severe climates with their short seasons we might expect that the colony would live until fall, to die during the winter owing to its enfeebled condition. In Cali-

fornia or other semi-tropical sections where the bees are active throughout most of the season the course of foulbrood would be presumably quicker, owing to the turnover of young bees as the old ones wear out. So my guess would be that inside of three or four months the "wild" colony would be out of business, and therefore the bee hunter would not find it. Other bees would scent out the honey and rob it out however.

Authorities agree that in all probability the bee is not indigenous to North America. The Indians had no name for it and called the bee the "White Man's Fly." Therefore what we call "wild" bees are simply escaped swarms or their descendants. On what grounds therefore can it be assumed that their instincts or heredity are in any way different from those bees which we keep under domestic management? The swarm of bees in a tree, or a hole in the ground are living under the same conditions, and behave the same, as those in the hives, and if taken and

transferred into a hive they are indistinguishable from other bees.

I recall an article in the "American Bee Journal," though I cannot trace it, in which the interesting suggestion is made that colonies of bees in a wild state have one important advantage over those in the hives in resisting foulbrood. This is the fact that they are not confined to a limited area, but can move their brood nest over to new comb in the hollow tree when foulbrood gets into the old combs. Of course our experience would indicate that before long the disease would follow them, but at the same time the fact that they would have so much extra leeway might be a factor in developing within the bee's organism the factor of resistance which is proved by the experimental work now being carried forward in trying to breed resistant strains.

Dr. Hunt points out that in the South are found the sections showing the lowest percentage of disease. But "wild bees," box hives, and bee gums are by no means the only, or even major causes for the spread of disease. In point of fact box hives and bee gums are practically obsolete today. We certainly have none here in Manitoba, and very few wild bees. Yet foulbrood stays with us, and only the first-class inspection and eradication work of Mr. Floyd and his assistants keeps us from epidemics of the utmost severity. The reason is plain. Twenty years ago Manitoba honey was a rare delicacy. Today there are more than three thousand registered apiaries with a production running into millions of pounds. Every year sees its quota of new recruits into the game, and inevitably there are those who start bees and neglect them, or who do not recognize disease when it does appear. I could name those who started with bees thinking they needed scarcely any attention and whose bees were all burned by the inspectors a year or two later. When a territory is as well stocked with bees as this is, you do not need any deep scientific research to find out why foulbrood is present. The best that anyone can do is to keep everlastingly on the watch and clean up each case when found.

However, Dr. Hunt is right when he implies that we should look for the ultimate remedy in heredity. The experimental work now going on will probably some day give us a resistant strain of queens. The fact that some colonies have cleaned up by themselves and that this ability does in some cases descend to their descendants is the best news that we have had for many a long day in connection with this problem. But it is not "wildness" or "tameness" that is significant, for there are strictly speaking, neither wild, nor tame bees.



Conserve the Wild Honeybee

By Clarence J. Tontz,

Oklahoma.

IN many regions of North America the fight against bee diseases is strictly and efficiently carried on. That is all well and good; but included in the program of warfare, in many places, is the destruction of tree bees.

Now when the inspector is certain a tree of wild bees is infected he is justified in destroying them. But the flaw is, too many tree colonies are destroyed on the assumption that they are guilty, not on the fact that they are. There are also cases of strong, healthy tree colonies being hunted in the timber and killed, even though their executioner is aware of

the fact, for fear his colonies will be affected; which is probably as bad as going to a neighbor beekeeper's apiary and destroying one or more of his strong, healthy colonies on the assumption that they might affect his apiary.

Now one may say a colony of bees in a hive and a colony of bees in a tree cannot be compared in all respects nor treated in the same manner. That is true, but each has its merits—good or bad; and the writer will endeavor to point out that the merits of a tree colony from the disease preventive standpoint are far superior to those of a domestic

colony. Nature has provided for that. Although it has been stated that there apparently is no reason why tree bees might not be subject to disease the same as domestic bees, available facts are at hand to disprove this.

Bacillus Larvae, as most of us know, is not spread through the atmosphere, but before a colony can become diseased the spores of the germ has to be transported into the hive by the bees themselves or by careless manipulation of the bee equipment. Thus the disease uses its victims to perpetuate its power. Tree bees back in the timber stand much less chance of coming in contact with other wild bees or domestic bees as the home bees themselves. Tree bees are not nearly so tempted to rob due to the absence of close weak neighboring colonies; neither are they likely to suffer from careless handling of a keeper. The interchanging of combs, an important factor in disease spreading, does not exist with the wild bee's mode of living. The experience of those in a position to say can be given. "The bees in trees will take care of themselves if the disease on the ground is eliminated."

This brings to mind a recent editorial in the *American Bee Journal*. A paragraph or so was devoted to the discussion of the killing of tree bees because of the suspicion that they harbor bee disease. The editor stated that in all his experiences of handling bees from trees he had not detected any foulbrood. He also stated that the Michigan inspection service reported no disease in trees over a period of two years of examining such places.

When there appears such statements as above and when the writer can truthfully say that in his own experience of cutting trees and hiving the bees (which were a goodly number) there was no evidence of disease neither at the time of cutting the tree nor later in the hive, then there seems ground enough to warn against wasteful slaughter.

1. Control of A. F. B., F. B. Paddock, Ames, Iowa, page 3.
2. *American Bee Journal*, August 1935, pages 371-2.

There are several important reasons why the wild honeybee should not by any means become extinct or depleted. The chief reason is the pollination problem. Domestic colonies are, by no means, distributed about the country in such a manner that our plants, from the apple tree down to the clover, are sufficiently pollinated in order that they might better serve their purpose. There are thousands of farms on which a single colony of bees is not kept; yet on most of these farms a few fruit trees or an average sized orchard is

(Please turn to page 133)



Laboratory equipment used for chemical investigations of honey in the Bureau of Chemistry and Soils at Washington. This lab is in Carbohydrate Research Division and Dr. Lothrop is too intent in what he is doing to note the camera's click.

The Composition of Honey and Its Utilization —Relation of Composition and Viscosity

By R. E. Lothrop,

Carbohydrate Research Division, Bureau of Chemistry and Soils,
U. S. Department of Agriculture.

IT has been pointed out in work previously reported how certain properties of honey are of particular value from the standpoint of its utilization for industrial purposes, particularly with respect to the larger industrial uses for honey, such as in baking and candy manufacture. For instance, it has been determined that the superior ability of honey to absorb and retain moisture (technically called hygroscopicity) in comparison with other common sugar sirups should give it special value for use in baking, for treating tobaccos (particularly cigarette and plug tobaccos), and for other purposes where ability to absorb and retain moisture is desirable.

In studies that have been conducted by us, it was shown that the ability of honey to withstand heating to elevated temperatures without decomposition (technically called caramelization) and loss of flavor varied considerably among the various floral varieties. This variation is due primarily to differences in chemical composition, particularly with respect to less common components such as suspended colloidal material, nitrogenous substances, mineral components, etc.

Contribution No. 146 from the Carbohydrate Research Division, Bureau of Chemistry and Soils, U. S. Department of Agriculture.

Ability to withstand heating without decomposition and loss of flavor is of particular value in commercial baking, candy making and in other industries where heating to elevated temperatures is required. It has also been shown that this property of honey affects the finished baked product when honey is utilized in the commercial baking of bread, cakes and cookies.

In line with the general plan of determining the composition factors that determine the suitability of various types of honey for industrial use, a study of the composition factors that influence the viscosity (more commonly referred to perhaps as body) of honey has been made. The term "viscosity" in technical language is used to designate the resistance of a liquid to flow. Lubricating oils are classified on the basis of viscosity, since, of course, viscosity is an important consideration in lubrication. The terms "20," "30," "40," etc., used to designate various grades of lubricating oils, refer merely to the time required for a definite quantity of the oil to flow through a standard tube at a fixed temperature.

In this article it will be shown how the viscosity of honey influences certain of its characteristics that are important in its utilization for

specific industrial purposes. In addition, of course, it is recognized that good body (which corresponds to high viscosity) is a very important consideration when honey is to be used for direct table consumption. Besides these considerations, viscosity must be taken into consideration in extracting, blending and processing honey and also as a factor in controlling the speed of crystallization.

Whereas, some studies of honey viscosity have been carried out, no comprehensive investigation of the relation of viscosity to the chemical composition of honey has been made. Fellenburg (1), a German chemist, has investigated certain phases of this subject. The primary purpose of his work, however, was to develop a method of detecting adulteration. He found that adulteration of honey with corn sirup could be detected from the fact that the dextrins present in corn sirup appreciably increase the viscosity of the adulterated product. His work might have been extended to include the effect of adding pure sugars. Chataway (2) has developed a method of measuring the moisture content of honey based on viscosity values. Risga (3), in studying the physical constants of Latvian honeys, observed that the viscosity of honey was greatly reduced by warming (a very

well-known fact). He pointed out further that the decrease in viscosity is very rapid up to a temperature of about 105° F. From 105° to 120°, the decrease is much slower, and above 120° the decrease is hardly perceptible. From this it would be concluded that there is no advantage in heating honey much above 110° F. for the purpose of reducing the viscosity (or body) when straining or blending. Certainly heating to temperatures above 120° F. would offer very little advantage from this standpoint.

Risga (loc. cit.) also observed that the viscosity of honey did not depend on the water and sugar contents only, at least not directly. In heather honey the viscosity was found to be very much greater than that of honey from other flowers, even when the moisture contents were approximately equal. Because of this, heather honey presents unusual difficulties in extracting from the comb.

In view of these considerations, we have conducted a study of the viscosity (or body) of honey in relation to various composition factors, such as the proportion of dextrose and levulose, colloids, dextrans, etc., and have attempted to show the relationship between certain characteristics of honey and its viscosity. In addition variations in the viscosity of several honeys over a limited temperature range have been determined.

For these studies a group of 10

representative American honeys was selected. These honeys were chosen so as to include as wide a variation with respect to composition and other characteristics as possible. These included samples of buckwheat, sumac, catclaw, orange, tarweed (with some admixture of honeydew), Hawaiian honeydew, white sage, alfalfa, sourwood, and white clover. The moisture contents of these honeys varied between 16.3% and 19%, and the content of organic non-sugars between 4.50% and 14.50%. Colors (Pfund scale) varied between 0.8 for orange to 12.9 for buckwheat. Complete analyses of the honeys are given in Table I.

Viscosity and Moisture Content

The relative viscosities of the different samples are expressed as degrees poise, which is the absolute scale for expressing viscosity. A high poise value corresponds to a high viscosity (heavy body), whereas low poise values correspond to low viscosity. In principle, the method of determining viscosity consists of measuring the time required for a definite volume of the honey to flow through a small tube under a definite and controlled pressure and at a fixed temperature.

Values of viscosity of each sample were measured at the original density, and with the moisture content adjusted to exactly 20.00%. The latter measurement was made so as to compare the viscosities of the

Table II—Viscosity Values of Honey of a Variety of Floral Types

| Predominant Floral Type | Viscosity in Poise at 45° C. | | |
|-------------------------|------------------------------|------------------|--------------------------|
| | Total Solids % | Original Density | Adjusted to 20.0% Solids |
| Buckwheat | 81.5 | 6.36 | 4.03 |
| Sumac | 83.7 | 14.36 | 4.11 |
| Catclaw | 80.1 | 3.18 | 3.14 |
| Orange | 82.7 | 7.11 | 3.13 |
| Tarweed | 83.0 | 12.28 | 4.74 |
| Hawaiian Honeydew | 82.5 | 9.89 | 4.39 |
| White Sage | 83.0 | 8.35 | 3.29 |
| Alfalfa | 83.4 | 8.92 | 3.10 |
| Sourwood | 83.7 | 12.36 | 3.73 |
| White Clover | 83.3 | 9.44 | 3.31 |
| Pure Invert Sugar | 80.00 | — | 2.45 |

various samples at the same moisture level. The results of these measurements, given in Table II, show a variation among the honeys at original density from 3.18 poise for catclaw to 14.36 poise for the sample of sumac honey. The extreme variation of the samples after adjustment to a moisture content of 20.00% was 3.10 poise for alfalfa and 4.74 poise for tarweed. These values compare with a value of 2.45 poise for pure invert sugar (when adjusted to a 20.0% water content).

It is to be noted that honeys (at original density) showing the highest viscosities contain the lowest water contents with the exception of the honeydew and tarweed. In case of the samples adjusted to 20.00% moisture contents, highest viscosities are shown by those samples containing the highest proportion of non-sugar substances, namely, honeydew and tarweed. This accounts for the apparently heavier body of honeydew and other honeys containing appreciable quantities of non-sugars; substances such as dextrans apparently increase the viscosity to a marked extent. Apparently all honey is somewhat more viscous than pure

Table I—Composition of Honeys Used for Viscosity Measurements

| Predominant Floral Type | Locality | Color (Pfund scale)* | Total Solids % | Dextrose % | Levulose % | Sucrose % | Ash % | Organic Non-Sugars (by difference) % |
|------------------------------------|----------|----------------------|----------------|------------|------------|-----------|-------|--------------------------------------|
| Buckwheat, Marathon, N. Y. | | 12.9 | 81.5 | 36.74 | 37.43 | 0.37 | 0.13 | 6.83 |
| Sumac, Norwichtown, Conn. | | 3.9 | 83.8 | 32.82 | 39.13 | 3.18 | 0.33 | 8.34 |
| Catclaw, Marathon, Texas | | 1.5 | 81.0 | 35.92 | 40.00 | 0.44 | 0.11 | 4.53 |
| Orange, Los Angeles, Cal. | | 0.8 | 82.7 | 34.11 | 40.99 | 2.41 | 0.08 | 5.11 |
| Tarweed, Placerville, Cal. | | 5.6 | 83.0 | 31.24 | 35.86 | 0.80 | 0.60 | 14.50 |
| Hawaiian Honeydew, Honolulu, H. I. | | 11.9 | 82.5 | 33.00 | 37.67 | 1.73 | 1.11 | 8.99 |
| White Sage, Los Angeles, Cal. | | 1.3 | 83.0 | 33.45 | 41.64 | 1.27 | 0.10 | 6.54 |
| Alfalfa, El Centro, Cal. | | 6.0 | 83.4 | 36.51 | 38.70 | 2.32 | 0.13 | 5.74 |
| Sourwood, Brookneal, Va. | | 2.3 | 83.7 | 29.70 | 43.16 | 3.19 | 0.27 | 7.38 |
| White Clover, Cloverdale, Ohio | | 1.7 | 83.4 | 36.09 | 40.61 | 1.27 | 0.10 | 5.33 |

*Intensity of color increases with the numerical value.

Table III—Relation of Viscosity to Concentration of Solids in Honey

| Concentration of Solids % | Viscosity (Poise) at 45° C. | | |
|---------------------------|-----------------------------|---------------|--------------------|
| | Buckwheat Honey | Tarweed Honey | White Clover Honey |
| 83.4 | | | 9.436 |
| 83.0 | | 12.279 | |
| 82.0 | | 8.855 | 6.064 |
| 81.5 | 6.356 | | |
| 81.0 | | 6.382 | 4.393 |
| 80.0 | 4.029 | 4.743 | 3.313 |
| 79.0 | 3.051 | 3.412 | 2.552 |
| 78.0 | 2.343 | 2.698 | 1.985 |
| 77.0 | 1.784 | 2.077 | 1.555 |
| 76.0 | 1.440 | 1.646 | 1.189 |
| 75.0 | 1.193 | 1.315 | 1.051 |

Experimental candy making equipment suitable for studying the use of honey of various types for candy making purposes. Both pictures were furnished by Dr. Brown of the Bureau of Chemistry.



invert sugar of approximately equal water content. Since pure invert sugar is almost free of non-sugar substances, this difference in viscosity of "body" apparently is due collectively to the non-sugar substances present.

When samples of honey are diluted successively with small amounts of water, the viscosities corresponding to the various dilutions drop very rapidly at first and then more slowly at greater dilutions. Above a moisture content of 22%, the drop in viscosity is considerably smaller than at or near original honey density. Viscosity values are given in Table III.

Viscosity in Relation to Colloids.

It is well known that colloidal and other suspended particles have a marked influence on the viscosity of the suspending medium, tending in general to produce increased viscosity. Since it is known that honey contains definite quantities of colloidal substances, a study was made of the effect of the colloids present in honey on the viscosity. For this purpose the colloids were removed more or less completely from the honey by means of ultrafiltration. The viscosity of each sample was then determined after removal of colloids at a moisture level of 20.00% and compared with viscosities of the corresponding samples at the same moisture level before removal of the colloids. Data are given in Table IV. The results show that colloids distinctly increase the viscosity of honey. There appears to be no quantitative relationship between the increase in viscosity and the relative proportions of colloids present, indicating that variations in the nature of the colloids themselves are very significant.

Table IV—Effect of Colloids on Viscosity of Honey

| Predominant Floral Type | Total Colloids % | | Viscosity of Honey* Adjusted to Solids Concentration of 80.0% Poise | Decrease in Viscosity Due to Removal of Colloids—% |
|-------------------------|------------------|--------------|---|--|
| | Original | Colloid-free | | |
| Buckwheat | 0.80 | 4.03 | 3.88 | 3.7 |
| Sumac | 0.19 | 4.11 | 4.06 | 1.2 |
| Catclaw | 0.09 | 3.14 | 2.89 | 8.0 |
| Orange | 0.09 | 3.13 | 2.85 | 8.9 |
| Tarweed | 0.18 | 4.74 | 3.82 | 19.4 |
| Hawaiian | | | | |
| Honeydew | 0.28 | 4.39 | 3.75 | 14.6 |
| White Sage | 0.12 | 3.29 | 2.94 | 10.6 |
| Alfalfa | 0.15 | 3.10 | 3.07 | 0.9 |
| Sourwood | 0.15 | 3.73 | 3.49 | 6.4 |
| White Clover | 0.18 | 3.31 | 3.05 | 8.1 |
| Pure Invert Sugar | | | 2.45 | --- |

*Measured at 45.00° C.

Effect of Dextrins on Honey Viscosity

Fellenberg has pointed out that the so-called "dextrins" present in honey

increase its viscosity somewhat. Since his measurements were made on honey solutions (diluted honey), the influence of dextrins on viscosity at or near original honey density was not indicated. An attempt was made, therefore, to obtain an approximation of the effect produced by dextrins on the viscosity of honey at original density. The dextrins were removed by means of alcohol precipitation and viscosity measurements then made at a moisture level of 20.00%. Values were compared with the same colloid-free samples at equal moisture contents before dextrins were removed. Data are given in Table V. A very marked decrease in the viscosities of the dextrin-free sample was obtained in each case. The decrease was found to be approximately proportional to the dextrin content.

Table V—Effect of "Dextrins" on the Viscosity of Honey

| Predominant Floral Type | Dextrin Content (Dry Basis) | Viscosity Honey Adjusted* to Solids Concentration of 80.0% Poise | | Change of Viscosity Due to Dextrins |
|-------------------------|-----------------------------|--|--------------|-------------------------------------|
| | | Colloid-free | Dextrin-free | |
| Buckwheat | 0.78 | 3.88 | 3.70 | 4.8 |
| Sumac | 5.06 | 4.06 | 3.30 | 18.4 |

*Measured at 45.00° C.

These results indicate that the greater viscosity (or body) of honeydew honey is due to the greater proportions of dextrinous materials present, since dextrins occur in much greater proportions in honeydew honey than in floral honey.

Influence of Other Composition Factors on Honey Viscosity

The composition of honey varies considerably with respect to the content of inorganic salts, and the relative proportions of the various sugars. Certain investigators have found that solutions of neutral salts are in most cases less viscous than a sugar solution of corresponding moisture content. So-called alkali salts, on the other hand, greatly increase the viscosity of a sugar solution due to combining with the sugar present to form substances called "saccharates." Judging from the composition of honey ash, any influence exerted by mineral constituents would be in the direction of decreasing the viscosity. However, the amount of mineral matter present in most honey is quite small, and the effect on viscosity would probably be correspondingly small.

Since the proportion of dextrose and levulose in honey varies considerably among different floral types, any difference in the relative vis-

Table VI—Relative Viscosities* of Solutions of Sucrose, Dextrose and Levulose at 25° C.**

| Concentration of Sugar % by Volume | Sucrose | Dextrose | Levulose |
|------------------------------------|---------|----------|----------|
| 60 | 12.701 | 9.660 | 8.628 |
| 50 | 6.625 | 5.853 | 5.216 |
| 40 | 4.073 | 3.725 | 3.385 |
| 30 | 2.616 | 2.494 | 2.352 |
| 20 | 1.794 | 1.773 | 1.713 |
| 10 | 1.313 | 1.308 | 1.274 |

*Expressed in centipoise units.

**Taken from work of Powell (4)

cosity of levulose and dextrose solutions would have a corresponding influence on the viscosity of the honey. At equal concentrations levulose has a lower viscosity than dextrose, whereas sucrose (cane sugar) has a considerably higher viscosity than either dextrose or levulose. Comparative values for several different concentrations of the three sugars are given in Table VI.

Variations in the proportion of dextrose and levulose that occur in honey produce a corresponding influence on the viscosity. Tupelo honey, for instance, contains almost twice as much levulose as dextrose, whereas in alfalfa honey approximately equal proportions of the two sugars are usually present. The quantity of sucrose in honey in general is too small to produce any appreciable variation in viscosity.

While dealing with the question of viscosity, it might be well to mention another phenomenon exhibited by certain types of honey that is closely related to viscosity. Some honeys are found to change viscosity upon agitation (flow more freely); on standing, however, they revert back again to their original condition. This behavior is called "thixotropy," and is shown to greatest extent by the heather honeys of Europe. Heather honey is so resistant to flow that it is difficult to extract from the comb, and must be agitated in order to be removed by centrifuging. While no American honey exhibits this property to as great a degree as heather, buckwheat honey is known to be "thixotropic" to a certain extent. It is not known definitely to what constituents in honey this peculiar behavior is due. Since certain types of colloidal suspensions behave in this manner, in all probability some colloidal substance or substances are responsible for this behavior of heather and buckwheat honey.

Viscosity and Hygroscopicity

Hygroscopicity (ability to absorb and retain moisture) is of considerable importance in the industrial utilization of honey. It has been

shown in experimental work carried out in connection with this study that a definite relationship exists between viscosity and moisture absorbing power.

Tulip poplar and buckwheat honey, both of which show greater viscosities than clover, alfalfa and other light colored honeys at the same moisture level, are found also to possess greater hygroscopicity. On the other hand, tupelo honey, which has a lower relative viscosity than these two honeys, also shows a lower relative moisture absorbing and retaining power. This is true in spite of the fact that tupelo honey contains an unusually high proportion of levulose, which

would normally be expected to greatly increase its hygroscopic nature.

These observations tend to emphasize the fact that certain characteristics of honey which are of importance in its utilization may be governed by a number of different factors. Failure to take all of these factors into consideration when determining the suitability of a honey for a specific use may lead to the selection of a honey that is not best suited for the particular purpose.

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—ABJ—



Sunny Jim



Indiana beekeepers would call Jim Starkey "Sunny Jim" and be right about it. He has inspected their bees for years now, from the days when he carried his duffle under his arm and his smoker in hand, sleuthing as deputy for Inspector Yost, down to the dignity of his chief inspector days, with a good gang of deputies of his own.

Probably Indiana's kindly inspection service would suit any state. They keep stressing the fundamentals and teaching the same old do's and don'ts that all of us seem to need to be told about a million times. They work with and through the active associations and where the beekeeping interest is keen. After all, it is self interest that brings the inspector to the call of the beekeeper. If beekeeping is to succeed it must be because we who live by it want it to succeed. So Indiana inspection is the most active and efficient where the beekeepers themselves want it to be that way.

When winter comes and snow and ice cover the green earth, Jim doesn't hole up. Not that boy. He starts a whirlwind of winter meets that keep the beekeepers on their toes all winter and bring despair to poor

Mrs. Starkey, who must stay home and shovel coal alone. Our sympathies, madam, for you; but our hat is off to Sunny Jim.

—ABJ—

Requeening

In regard to your editorial "This Season Hard on Queens," we have no doubt that it is correct, the way they have been putting out the brood, but we presume you mean queens one year or more of age. We have replaced one hundred twenty-five queens. Some have put out a lot of brood and we believe they will serve into the 1939 season.

The swarming fever has run high this year and there were many

drones reared early. In another journal one beekeeper mentions that a queen that deposits drone eggs should be replaced. We do not hardly agree. Even my most prolific queen will deposit drone eggs when crowded or when the colony gets the swarming fever. This depends on circumstances.

In requeening, we have queens in storage in two or four comb nuclei and for positiveness in acceptance, we most always leave the colony queenless for a week. When introducing queens ordered from the breeder, we then cut out any queen cells that may be started, before introducing the new one.

We seldom make a general practice of requeening after a good honeyflow has started. There is too much work in finding the queens because of the great number of bees in the colony.

Alfred P. Johnson,
Illinois.

—ABJ—

Conserve the Wild Honeybee

(Continued from page 129)

maintained. Most of the individuals on these farms have no knowledge of beekeeping; others fear the bees; and still others do not care to "piddle around" with bees.

As a result of the absence of domestic colonies on farms, the percentage of the fruit yield is lowered; and were it not for the fact that timbered areas on some of these farms usually harbor a few colonies of tree bees the low yield would be alarming. Most of our large orchards meet the pollination problem by renting bees from commercial beekeepers during the blossoming period. But on the farms of only a few trees and located back from improved roads, this procedure is impractical.

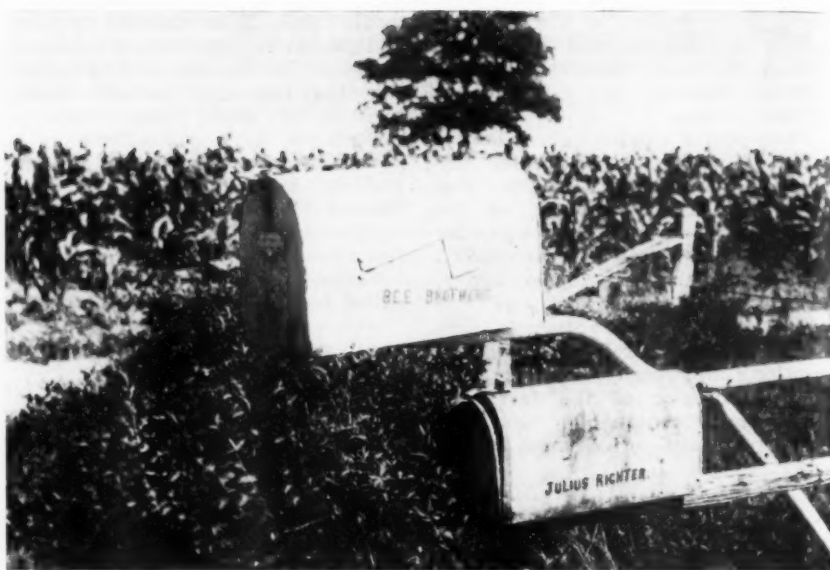
May we not measure in any small amount the pleasure and pastime afforded by the sport of hunting bee frees. Many a native family's sweets are composed chiefly of the spoils from the "bee tree cutting." Many a beekeeper has gotten his start by hiving a few colonies of tree bees.

In conclusion the writer would again like to make clear that he does not criticize those striving to stamp out disease. He only desires to caution the stamper who is stamping in the wrong place. True there may be found diseased tree bees, but too many innocent ones come "under the knife." The wild honeybee is a valuable asset to our country; and is in a class with our natural resources.

Until it does prove a menace to the beekeeper's welfare, should, then, it not be conserved?

The Bees Pass Up Julius Richter

And Bee Brothers get the benefit. The Mascoutah Publishing Company, Mascoutah, Illinois, sends the two pictures. Note one mail box, the lower one, is for Julius Richter and that the top one is for the Bee Brothers. A. D. Jenkins, of the Publishing Company, says: "The pictures show that the bees were smart enough to pass up the box of Julius Richter and alight instead on the box of the Bee Brothers. 'Believe it or not, it is the truth, and the name of the Brothers as painted on the box has been there for many years. We took the top picture later to prove the statement. The remarkable incident has made quite an appeal to the collectors.'"



A Honey Boy Mows 'Em Out

Not much of this kind of winter protection in evidence in the Midwest this winter. The picture is a hold over from Harold Arp, of Amherst, Nebraska, sent April 5, 1938. He says, "This shows our son, Arnold, a two-year-old honey baby." And apparently Arnold knows his friends are inside the hive and he thinks they need the air.

It is seldom necessary to remove snow about hive entrances, however, as a matter of practice. When the snow melts and forms ice there is then danger of smothering the bees, but the snow itself is a fine winter blanket. Colonies may often release enough warm, moisture-laden air into a heavy blanket of snow to thaw a little igloo in which they remain comfortable indefinite periods.

Rendering Tips

In order to get as much wax as possible from brood combs, it is necessary to use some sort of wax press. Merely boiling in a sack under water, as some advise, is unsatisfactory and usually results in securing less than half of the wax. With a suitable press, one should be able to secure approximately 2½ pounds of beeswax from ten average brood combs. If one is not equipped for this work, it is preferable to sell the combs and cappings or to exchange them for foundation.

When beeswax is rendered from combs or cappings containing a considerable amount of honey, the wax, upon cooling, is often found to be mealy or crumbly. The remedy is to remelt the wax in clear water.

Be sure to use plenty of water in rendering, at least as much water as wax. Otherwise, there is danger of boiling over or even of explosion. One should always have cold water handy so that in case the wax starts to boil over, a dipperful of water may be added, thus cooling the temperature below the boiling point.

To prevent cakes of wax from cracking in cooling, lay a board over the top. Cracking is caused by unequal cooling; that is, the surface cools faster than the inside of the cake. To prevent sticking to the pan or mold, wet the mold with water in which soap has been dissolved.

Remember that beeswax coming in contact with iron rust will be blackened. The same is true of honey. It is highly probable that wax may be darkened by using well water containing iron compounds. Who knows from experience?

E. S. Miller,
Indiana.



Trenched for Winter

D. W. Spangler, of Longmont, Colorado, pictures his bees in the winter of 1937-1938, in a trench, like some of the Idaho beekeepers use.

He writes, "I followed the Idaho plan; buried them. The hives were set against a ditch bank, after cutting the bank to a perpendicular wall. I put building paper over them, holding it to the entrances with wood strips. Put straw on top, and behind, and between; a layer of dirt on top. March first they seemed to have as much stores as when covered in late October. I lost only three of the seventy, the finest record I ever had."

Bank Display

A number of years ago, Herbert Morehouse, of Michigan, used an advertising stunt which should interest others. He arranged with his Citizens State Savings Bank on one Saturday in September to install an observation hive of live bees and to answer questions about the bees and their work throughout banking hours on that day.

The bank in turn put out an advertisement inviting the public to "See the Busy Bees at Work in a Busy Bank. The public is cordially invited. We promise you that you will never get 'stung' in this bank." A novel idea, worth trying.

In his local newspaper, Morehouse frequently has stories about honey and its uses. They are well-written, interesting and without any particular advertising slant. Most newspapers are willing to print stories of this sort.

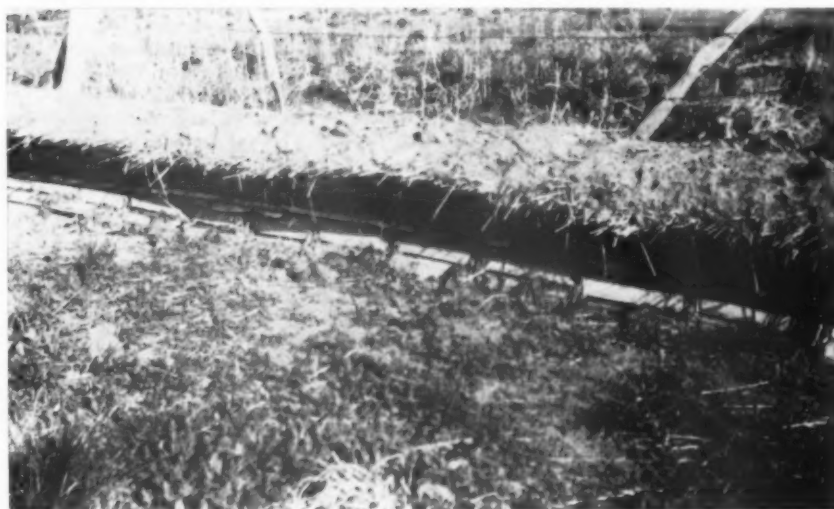
In fact, Mr. Morehouse is a clever advertiser in that he doesn't appear too conspicuously as one who has something to sell, and yet he really benefits the public in many ways by his activities. Another interesting stunt of his is to address students in schools on the subject of beekeeping from the classroom point of view, and usually these addresses receive newspaper comment. It all helps the beekeeper who has honey to sell.

—ABJ—

Ants

Ants are often found between the inner and outer covers of hives. The large, black ants sometimes gnaw the wood, doing considerable damage. To keep them out, all that is necessary is to give the bees access to the between-cover space, through an opening in the inner cover.

E. S. Miller, Indiana.



Where Do We Go From Here?

Griz shows the way it is. Probably Virgil said something very like the old guy Griz draws. Today, it's different. Eleven supers is not average but it's not unusual. With speedy queens, high nectar-yielding plants, bee seeded legumes for farm acres, we may even beat that record.

What shall we do about it? Griz subtly tells us one thing we may do and this suggestion needs no further amplification here. Going back over our own production records, we find many years when comparatively low honey yields were nevertheless, profitable years, because the market price for honey was high and remained so for an extended period. Now we have a season when, with a large midwestern crop, and the national crop at or below normal, prices skid badly and honey holes up to wait for the next year, when it may be added to a new crop to repeat the very situation which its warehousing was an attempt to avoid.



All Around the Bee Yard

By G. H. Cale

THERE'S something in those two queen colonies, Dr. Farrar. Don't quite like your upright, 2-queen hive; too much labor. The so-called dual hive looks better from the standpoint of apiary management. Maybe not, —but that's the way it seems now. We tried the Bell Duo-hive this year with some interesting results. Too early to tell much about them yet.

— o —

AT one time I made the statement that unless a 2-queen colony produced more than the total production of two queens in separate hives, this management would not be worthwhile. I have changed my mind. You know the old saying, "The wise man changes his mind. (Ahem!)." Here's the point. I think it costs less per colony to manage the two queens in one hive than it does the two queens in two separate hives. Ever think about that? Even though the total production is no greater for the number of queens in use, the cost of production may be less. Keep this in mind if you try the 2-queen system.

— o —

WE are waiting for the first printed report of the California cost studies. Have been talking to Jim Hambleton about them. In the records of beekeepers cooperating in this study there are only two or three with costs less than 5 cents. What are your costs? I'll bet a cookie you don't know.

If you have more than 500 colonies, my guess would be a cost between \$4.00 and \$5.00 per colony. If you have less than that and pick son Johnnie and daughter Mary, and a neighbor boy to help you do most of the work, and hold down some other job on part time, you may get your honey more cheaply and if you have a few bees in your backyard, of course your honey will be a gift, — **and you will sell accordingly!** (Boy, oh boy; now have I started a riot!)

— o —

WHAT has gone haywire in the honey market? A peak production in the Middle West, but a production below normal for the country as a whole, has sent honey into hiding and prices to the bottom. If we can't stand a crop less than the national average, we are a long

way from orderly markets. It is time some of us began to think about what to do.

— o —

IT is too bad that most beekeepers believe the large buyers or packers are the ones to blame for low honey prices and slow movement. Slow movement is due to industrial conditions, competing foods, lack of merchandising, poor market approaches of various kinds. The commonly heard accusation that the packer is to blame for the price is also wrong. Some of the prices at which beekeepers are selling honey this year are enough to scorch the hair off any packer's head.

— o —

NO, after all, the beekeeper is to blame for most of his ills. It is time he tried to do something to better the situation which affects the product from which he makes a part or all of his living.

— o —

RALPH Benton, in "Bees and Honey" for August, makes this remark about honey, "It is cheaper to eat it than to ship it." Then he shows a map of the United States indicating the per capita production of honey by states. The western states produce more per person than the eastern states, but, since western states have a scarce population and the eastern ones have a heavy population, this fact is very significant. Idaho and Wyoming, in the heart of the intermountain region, lead in the per capita production of honey. Some states in the East produce less than one-half pound per capita.

In Benton's estimate of honey producing areas, it is interesting to note that Los Angeles, the fifth largest city in the United States, is indicated as the largest honey market in the United States, and probably the greatest consuming center for honey.

With the heaviest production a long distance from the largest centers of population, the price established at the apiary by long freight hauls has much to do with the market figure for honey in sections which should be more favorably located.

In other words, a 4 cent price in the intermountain region may prevent the beekeeper east of the Mississippi from receiving more for

his honey than the added freight to his consuming center from the intermountain region. If freight is 1 cent on 4 cent western honey, the beekeeper east of the Mississippi river has to take 5 cents for his honey. If the area of heaviest honey production were immediate to the area of heaviest population, the price range would have a decidedly different trend.

— o —

ANOTHER mild winter! We have flight days since the 1st of December recorded as follows: December 4, January 10 through January 14, February 1, February 6, and February 12 and 13 to date. All of our bees are packed and comfortably protected from wind and so on, but one colony of bees, because of excess load when moving, was left on location on a flat wind-swept field, and was found, February 1, to be in excellent condition with wide open entrance and no packing whatever. And as fine a cluster of young bees as I have ever seen.

Observations like this, from year to year, make one wonder what the answer to winter protection is for each locality. We have come to use this phrase to picture management for winter, "Make sure that strong colonies have abundant stores; protect them enough so that they may use these stores at all times." That summarizes wintering.

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THERE is much talk lately about queen selection as a means to greater production. From specially selected queens last year we made a production 100% greater than average queens from other stock. Yet queens of high producing stock may do well in one place but not in another where conditions are different.

— o —

THAT brings up the possibility of selecting stock for similar types of locations, say, early crop in one, or mid-season crop in another, or fall crop in another, or locations where fall conditions are such that the season closes early or where spring is slow and backward and development is poor and it takes time for a colony to reach a flow peak.

— o —

POSSIBLY the talk about the adaptability of races of bees is silly. What we need is not races of bees, but selections of bees to do a given job in a given place. I heard Prof. Paddock talk about this in Kansas last week and he sure did a good job convincing me that it may be the answer to some of our production problems.

The Editor's Answers

Modified Dadant

How large a package of bees do you advise me to put in one of your hives? How large was your hive before you modified its size?

Answer.—Conditions make a lot of difference, but, as a general rule, a 3-pound package received at the proper time will do better than a 2-pound package in the Modified Dadant hive, although many of the large beekeepers purchase 2-pound packages as they are a little cheaper.

The brood chamber of our old style Dadant hive, is just about the same size as the Modified Dadant. The reduction in size is very little as in the old style Dadant hive the beekeeper was supposed to use a division board or dummy, thus making only ten frames in the old style Dadant hive.

The old style Dadant frames were the Quinby size. These frames are 1½ inches longer than the Modified Dadant frames. The depth of the two are exactly the same. The reason for making the change from the old style Dadant to the Modified Dadant was so that the new hive would have the same length as the standard Langstroth frame. It is much more convenient to operate the Modified Dadant hive in an apiary where standard Langstroth equipment is used and it is also much easier to transfer from standard 8-frame and 10-frame equipment to the Modified Dadant hive because frames will fit lengthwise in the Modified Dadant hive though they are not as deep.

ABJ

Brand Melter

I read an article about the Brand melter in the American Bee Journal. Where can I get government grader figures on the darkening of white honey run through it?

Clover Yields

Recently I read a comment that yellow sweet clover does not yield nectar like the white clover does. Here the white yields a great deal better than alfalfa, that is, a few acres will outyield a larger acreage of alfalfa, except once in awhile in the past alfalfa has yielded very heavily, but at times alfalfa yields almost no surplus and the white sweet clover never fails if there is any amount of it.

I have never noticed any honey stored from the yellow and there are often thirty or forty-acre fields of it.

I wonder how the Hubam does in comparison with the bi-annual white.

NEVADA.

Answer.—We do not know that any test has ever been made on the government grader with Brand melter honey. The difficulty with this would be that no two people operate the melter exactly alike, and as a result you have probably every shade of coloration.

The writer examined a number of samples from Mr. A. G. Woodman who had secured them directly from beekeepers using the melter. A number of the samples could hardly, if at all, be distinguished from the extracted honey. Others were considerably darker.

Mr. Woodman suggested that the desirable thing was to keep your melter as full as possible and not draw off the wax too often. This had the result of placing the wax against the upper gratings and the honey

did not come in contact with the heat. There was, therefore, little discoloration. We suggest you write direct to Mr. Woodman who is soon to issue a new direction sheet which he thinks will obviate any difficulty. He has, of course, made several improvements on the Brand.

Yellow sweet clover around these sections yields just as well as the white if not just a little better, although the season, of course, is not quite as long. Hubam annual is almost as good but of a short season. Alfalfa does not yield at all with us except in extremely dry years, like 1935, when we approach the arid conditions of the West.

Very little has been done on a study of nectar secretions of plants. That is something we need badly. Undoubtedly the secretion is different under different humidity conditions and on different soils but very little has been learned of it and no scientific work has been done.

ABJ

Bees On Red Clover

In one of your recent issues you published an article relative to bees working red clover; they were induced to work it by feeding every morning eight ounces of syrup made of sugar, which a blossom of red clover had been drawn through. This article went on to tell how much better the seed crop of the clover was. From reading it, I took it for granted that the bees were able to get nectar from the clover whereas I have always understood the tongue of the honeybee could not reach the nectar in red clover.

Where I am keeping my bees, they have discontinued planting red clover for the reason there were not sufficient bumblebees to pollinize it.

MISSOURI.

Answer.—The honeybees cannot ordinarily reach the nectar in the red clover plant and for this reason are likely to neglect it if there is anything else in bloom. They do sometimes work these plants for pollen when they cannot reach the nectar and in the case you mention it seems that the Russian plant breeders who were working their red clover attracted bees to the red clover fields by feeding them syrup containing clover blossoms and in this way they were able to get the bees to pollinate the blossoms when they otherwise might not have done so.

ABJ

Providing Food in Modified Dadant Hive

On the Modified Dadant hive do you have a food chamber as on the 10-frame hives?

ARKANSAS.

Answer.—In the northern sections, there are some beekeepers who do use a food chamber even on the Modified Dadant hive. We have always wintered our colonies in a single chamber. You will readily realize that the 11-frame Modified Dadant hive is 60 per cent larger than the ordinary 10-frame hive in a single brood chamber. In other words then, it is larger than the 10-frame hive with the ordinary shallow super food chamber and nearly as large as the two story 10-frame colony.

One thing we recommend is that in the fall the bees be crowded when honey is still

coming in so that they will crowd honey into the brood chamber. Otherwise you are likely to have the brood chamber left with too little honey as the bees continue breeding in those large combs. If such crowding is done in the fall, there will be no difficulty from running out of honey in the spring.

ABJ

Partly Drawn Sections

Can partly drawn sections be removed from the hive, saved over winter, and used again at the next honeyflow?

ILLINOIS.

Answer.—Whether or not you can use sections with foundation already partly drawn will depend on how long these sections were left on the hive after the honeyflow stopped. Foundation never deteriorates, but the sections themselves may have become travel-stained and glazed over with propolis so that they will not be No. 1 sections next year.

ABJ

Transferring With Acid

How can I use carbolic acid in transferring bees?

WISCONSIN.

Answer.—Carbolic acid has been used for some time in taking off supers or surplus honey. In transferring bees from one colony to another the acid process would operate on the same principle; that is, the bees would be driven down by the fumes of the acid applied above them. Have your empty hive below and the colony from which you are transferring above. Everything should be made tight. Then apply the carbolic acid cloth above the upper hive. After all the bees have left the old hive, do as you please with it. If it contains brood, you will probably want to put a queen excluder between it and the new hive until the young bees have emerged.

ABJ

Pollen Consumption

How much pollen does a colony of bees consume to produce a pound of bees?

NEBRASKA.

Answer.—C. L. Farrar states that Alfonsus, in a German publication, reports that forty-five ounces of pollen are required to produce 8,900 bees. Figuring about 4,500 to 5,000 bees to the pound, this would be about 1½ pounds of pollen to each pound of bees. In his own experiments, Dr. Farrar found that it took about two quarts of pollen to produce 9,000 to 10,000 bees, and he thought two quarts of pollen would be approximately three pounds. The figures of the two investigators tally fairly well and would indicate about 1½ to 2 pounds of pollen for each pound of bees produced.

ABJ

Bees on Shares

What would be a fair agreement between two parties for bees taken on shares?

ILLINOIS.

Answer.—The ordinary agreement made when one party owns the bees and the other party takes care of them, furnishes transportation, etc. is to divide the honey equally. Each furnishes containers for his share of the honey, and if comb honey is being produced each party pays for the sections for his half of the crop. When swarms are gathered, each party should get one-half of the swarms, and each should furnish hives for his half. Agreement of this sort should be made in writing.

Meetings and Events

Looking Ahead to California

At the recent National Beekeepers' Conference in New Orleans, the decision was made to have the next annual meeting in California, with the California State Beekeepers' Association the host. Upon receiving this announcement, the program and arrangements committee got busy and has arranged for the meetings to be held in Sacramento on November 7, 8, 9 and 10. Arrangements are being made for the necessary halls, hotels, banquets, entertainment and program.

While we cannot divulge all of our plans this early, we can assure every beekeeper who will plan in advance to pay a visit to California in 1939 that he will attend one of the largest beekeepers' conventions ever held in the West. During the next few months we will try to tell of the many scenic wonders tourists can see while in California and along the different routes taken by train or by automobile. The attractions of the Golden Gate International Exposition in San Francisco will make the trip worth-while.

We suggest that a trip to California in time for the convention in 1939 would make an excellent vacation trip from all sections of the United States, and any beekeeper can make the trip if plans are made sufficiently far in advance.

The time is early enough so that the roads will be open and in excellent condition and yet late enough to permit beekeepers in most sections of the country to have finished the work of the apiary for the year.

J. E. Eckert,
California.

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Institute on the Air

Recently, on a Goodyear program, Mrs. Harriett M. Grace, of American Honey Institute, broadcasted a program prepared on short notice at the invitation of Phil Evans about bees and honey. We listened to it from start to finish; a very good broadcast. There was not quite so much about honey as we would like to hear, but we have little doubt that Mr. Evans wanted to know a lot about bees as well as honey, and after all, you know, you have to suit the pleasure of your announcer in cases like this.

It went out broadcast to the entire United States. How much it cost the Goodyear Company for a

national hook-up for about 15 minutes of broadcasting time is beyond our knowledge, but we have no doubt it was plenty. Once more the good will of another industry has added immeasurably to the advertising of the beekeeper's product without any cost to himself. Thanks, Goodyear, and thanks, Phil Evans.

Mrs. Grace, We really should thank you too, shouldn't we?

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Washingtonians Gather at Portland

Washington beekeepers went out of the state this year for their annual meeting, gathering in Portland, Oregon, holding joint programs with the Oregon state association. Elizabeth Dickerson of Woodinville, was elected president for this year, succeeding I. L. Swain, of Prosser; Bruce Rose, of Yakima, vice-president; and Mrs. Eva Wixom, of Wapato, was re-elected secretary-treasurer.

Inspection in the two states was the topic of much discussion, also standardization of colonies for pollination. A school of experience, with delegates telling of their practices in efficiency in honey production, was a novelty at this meeting.

The Oregon group elected J. D. Haskell, Portland, president; J. Skovbo, Hermiston, vice-president; H. A. Scullen, Oregon State College, secretary-treasurer.

I. L. Neill,
Washington.

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Report of Spring Valley (New York) Meeting

A large and enthusiastic group of beekeepers and friends enjoyed an excellent program at Villa Lafayette, Spring Valley, New York, Friday, January 27. With the weather sub-zero, there was a roaring blaze in the fireplace. George Rea was at his best. His story of his rambles through the South and visits with the famous queen breeder Mel Pritchard, of Medina, Ohio, would be worth repetition.

Wm. J. Clark, Farm Bureau Agent, showed four films of beekeeping, roundly applauded.

Our association has a circulating library of available literature on beekeeping and if any of our beekeepers can help in this, it will be appreciated. Those interested in joining our association are cordially invited to correspond with the secretary.

John F. Hopf, Jr., Sec'y.
Spring Valley, N. Y.

Indiana March Meetings

| March | Muncie | P. M. |
|---|------------------|-------|
| 2—Delaware (All come to supper at Y. M. C. A., at 6:30 P. M.) | | 7:30 |
| 3—Rush | Rushville | 1:30 |
| 4—Henry | New Castle | 1:30 |
| 6—Fayette | Connersville | 1:30 |
| 7—Wayne | Richmond | 1:30 |
| 8—Randolph | Winchester | 1:30 |
| 9—Jay | Portland | 1:30 |
| 10—Adams | Decatur | 1:30 |
| 11—Allen | Fort Wayne | 1:30 |
| 13—Blackford | Hartford City | 1:30 |
| 14—Wells | Bluffton | 1:30 |
| 15—DeKalb | Auburn | 1:30 |
| 16—Noble | Albion | 1:30 |
| | Ligonier | 7:30 |
| 17—Whitely | Columbia City | 1:30 |
| 18—Huntington | Huntington | 1:30 |
| 20—Wabash | Wabash | 1:30 |
| 21—Kosciusko | Warsaw | 1:30 |
| 22—Elkhart | Goshen | 1:30 |
| | Elkhart | 7:30 |
| 23—LaGrange | LaGrange | 1:30 |
| 24—Steuben | Angola (Library) | 1:30 |
| 25—Miami | Peru | 1:30 |

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Tidewater Beekeepers Association

The Tidewater Beekeepers Association held its first winter meeting at the offices of the A. I. Root Company, at Norfolk, Virginia, on January 10. The meeting was attended by twenty beekeepers of the Tidewater area. A committee was appointed to write to various agencies in an attempt to stimulate the bee industry in Virginia. H. J. Carey reported on the meetings at Valdosta and Charleston and stressed the importance of standard size containers and of labels to conform to the type of honey. A round-table discussion, led by A. O. King, president, concluded the meeting.

R. A. Hedgworth,
Press Agent.

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Oklahoma State Beekeepers Association, March 15

The annual meeting of the Oklahoma State Beekeepers Association will be held March 15, beginning at 9:30 A. M., at the Historical Building on the state capitol grounds, Oklahoma City. A number of interesting beekeepers and dealers are invited and urged to exhibit their honey and equipment, since this will be an added feature of the meeting. The program is as follows:

Address of Welcome—Hon. Joe C. Scott, president of the State Board of Agriculture. Response—C. W. Kuwitzky, Norman. President's Message—D. W. Darrow, Muskogee.

"Package Bees"—J. W. Rice, Tulsa. "Horsemint Flow in Western Oklahoma"—Edwin A. Smith, Woodward. "Advertisement of Honey"—Kenneth Hawkins, of the G. B. Lewis Company, Watertown, Wisconsin. "Beekeeping as a Hobby"—Elmo C. Glenn, Tulsa. Appointment of the nominating committee.

Moving pictures of bees—Dr. J. C. Ireland, Oklahoma Agricultural and Mechanical College, Stillwater. "Pollen Program for Western Oklahoma"—W. W. Grover, Frederick. "Migratory Beekeeping for Okla-

homa"—L. D. Taylor. "Beekeepers Associations"—Dr. Ernest E. Scholl, director of extension, Oklahoma Agricultural and Mechanical College, Stillwater. "Bee Diseases"—Prof. G. A. Bieberdorf, Stillwater.

"Things for a Beginner To Do In Beekeeping"—Hiram Perkinson, Percell. "Services We Offer the Beekeepers"—C. F. Stiles, extension entomologist, Stillwater. "4-H Club Honey and Bee Products for Youth"—B. A. Pratt, state club agent.

"Honey Plants for Oklahoma"—Prof. J. W. Zimmerman, Ada.

Address—Dr. James I. Hambleton, Washington, D. C. New Laws for Oklahoma. Business meeting.

This meeting will be an outstanding event for the beekeepers of Oklahoma, and four hundred or more are expected to attend. A great deal of interest is being shown in beekeeping as the result of the fight to eliminate disease in Oklahoma.

J. M. Goin, State Entomologist.

—ABI—

Wisconsin Beekeepers Honored



Professor H. F. Wilson confers the state testimonial on A. L. Kleeber for his years of service to the beekeeping industry in Wisconsin.

On January 22 a half century of continuous exhibiting in the bees and honey department at the Wisconsin state fair was recognized, when Mr. and Mrs. A. L. Kleeber, of Reedsburg, were honored by their friends at a special ceremony.

Members of the honey industry in the state presented the Kleebers with a beautiful, hand-engraved parchment testimonial, signed by Ralph E. Ammon, director of the state de-

partment of agriculture and markets and manager of the state fair, James Gwin, superintendent of the bees and honey department at the state fair, and Walter Diehnelt, representing the exhibitors.

Surrounded by neighbors and bee folks with whom they had long been associated, the Kleebers had a happy celebration. The presentation was made by Professor Harley Wilson, head of the entomology department at the University of Wisconsin.

Noted Canadian Beekeeper Dies

James Frank Dunn died on January 3, at the age of 85, at his home in Ridgeway, Ontario. On Monday night, January 2, he walked upstairs to his own bed and during the night, while he was sleeping, passed away. Thus ended a life full of activity.

When he was about 25, Mr. Dunn took up beekeeping as a hobby, buying box and straw hives and transferring them to the then popular

bevel-joint Richardson hive, which he soon changed to square joint, much to Richardson's disgust, but his own satisfaction. From that time until 1938 he was continuously engaged in the business, first as a side line, later as a vocation.

During his lifetime, Mr. Dunn was active at various shows, exhibiting and judging. He was a familiar figure at meetings of the Ontario

Beekeepers Association and he wrote for the various beekeeping magazines, among them American Bee Journal. He was a leader in church activities and about ten years ago was awarded an honorary life membership of the official board of the Memorial United Church. (From the Canadian Bee Journal.)

— o —

Doings in Ohio

The Ohio Association met at Columbus January 30—February 2. Because of the large amount of honey still in the producers' hands, an attempt was launched to examine the possibilities of organizing a co-operative to help move the crop. Two days were devoted to this topic.

Most beekeepers at the meeting reported a large stock of honey on hand. Some thought that this might have resulted because bakers were not using as much honey as formerly. The loss of some of the baker market is attributed to the fact that a few beekeepers are careless in the quality of honey they deliver, honey which is not properly clarified and not a consistent color and flavor. Some reported that bakers had found honey in which the odor of carbolic acid was strong. In one case a baker dumped a car of bread because it was spoiled by an inferior grade of honey.

So the carelessness of a few beekeepers works a hardship on many. It will take many times more effort to get back this baker trade, if it is ever possible to get it back, than it will to keep it, now that it is already in our hands.

The new officers were L. C. Gardner, re-elected president; Emerson Long, vice-president; and Dr. W. E. Dunham, of Ohio State University, secretary.

Jere Frazer.

— o —

Middlesex County Plan

The Middlesex County Beekeepers Association is enjoying a revival of interest among its membership. The past three regular monthly meetings have been extraordinarily well attended and enjoyed, owing to a recent change in the arrangement of the program. Previously, the meetings were late getting started, because it was necessary to wait for a crowd to assemble. Now the ladies provide a supper, after which everyone helps with dishes and the business of the meeting proceeds. The theory behind this change was that by enlarging the refreshments to a regular supper and by having it before the meeting, people would be saved the necessity of going home from work before coming to the meeting, thus making for an earlier start. The hope of an early closing has not been

fulfilled, as we still get home about midnight; but dull and poorly attended meetings are no longer a problem. The association is very fortunate in having available the kitchen and dining room of the Middlesex County Agriculture Extension Service, at Concord.

Howard Potter, Pres.

— o —

Maryland Meeting

The thirtieth annual meeting of the Maryland Association, in Baltimore, January 11, brought out about a hundred peppy folks to discuss prospects and listen to Snodgrass tell how our favorite insect is put together; Economist Burdette analyze beekeeping chances in the state; Hiatt's Virginia views of Maryland beekeeping; Abrams, advice about what to do to make Maryland beekeeping click; and President Kelly's Irish wit.

Splendid honey exhibits and generous prizes, some \$400. Abrams somehow juggled this from racing proceeds that make up state fair funds. (Think I will move to Maryland and start exhibiting.)

Prize Winners

| | |
|---|----------|
| Mr. and Mrs. Byron Darby, Hyattstown, (including top sweepstakes) | \$104.00 |
| N. W. James, Baldwin | 79.00 |
| L. B. Sherman, Glenarm | 70.00 |
| F. D. Conell, Frederick | 41.00 |
| Spencer Biddle, Chestertown | 20.00 |
| C. M. Hicks, Hagerstown | 20.00 |
| C. A. Andrews, Jr., Govans | 19.00 |
| Carl Walker, Baltimore | 16.00 |
| C. Wayne Marshall, Baldwin | 16.00 |
| Howard Coale, Churchville | 12.00 |
| S. W. Beall, Monrovia | 12.00 |
| L. B. Sherman, Jr. Glenarm | 12.00 |
| L. I. Hilgarten, Phoenix | 9.00 |
| M. P. Ilgenfritz, Castleton | 8.00 |
| Mrs. J. E. Byers, Hagerstown | 2.00 |
| A. D. Hiatt, Virginia. | |

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Rock County (Wis.) Officers

C. W. Stone, Janesville, was elected president of the Rock County Association at the January meeting. Other officers: M. L. Osborn, Beloit, Vice-President; S. J. Riesterer, Janesville, Secretary-Treasurer. President Stone succeeds George Timpany.

H. C. Brunner,
Milwaukee.

— o —

Minnesota Valley Winter Meeting

The Minnesota Valley Beekeepers Association met at St. Peter on January 7. Robert Ray, of Minneapolis, gave a talk on "Honey Markets and the Twin Cities as a Honey Market" in which he said that, in his experience, price cutting could be ignored as long as market values warranted his own set price. Newman

I. Lyle, of Sheldon, Iowa, said that package yards with ample wind protection, plenty of pollen and honey stores, and not disturbed for two or three weeks after installation give the least supersedure.

An effort was made toward increasing the state appropriation for inspection from \$6,500 to \$20,000 since the present appropriation is inadequate for proper disease control in the state.

C. Edwin Swenson,
Secretary.

— o —

George Smith Ives

George Smith Ives, former mayor of Marshfield, Wisconsin, and president of the Wood County Beekeepers' Association for many years, died February 7 in a Marshfield hospital. He is survived by his wife and two sons, by a son and a daughter of a previous marriage, and by his father, six brothers and sisters.

H. C. Brunner,
Milwaukee.

— o —

The Ontario Convention

The 59th annual convention of the Ontario Beekeepers' Association was held at Toronto on November 22, 23 and 24. It was an outstanding meeting both in the number of beemen in attendance and in the interest manifested.

One session was given over to new scientific developments such as moisture absorbing properties of honey, time and temperature in relation to the destruction of yeasts in honey and the significance of pollen in honey which are under investigation by staff members of the College of Agriculture and the Dominion Department of Agriculture.

These are of vital importance in the preparation of honey for market and when fully understood will serve to avoid unnecessary losses of honey through fermentation and assist in determining the source from which the honey comes.

Much of the Canadian honey crop goes abroad for consumption and much discussion took place regarding the problems of marketing. Ontario has a cooperative organization which sells the crop for about 200 beekeepers and markets about three million pounds of honey annually.

An extremely interesting subject was an intimate picture of the home life of Langstroth by his grandson. Scrap books, photographs and other mementos of the famous beekeeper added to the interest.

— o —

Officers in Sheboygan County (Wis.)

L. L. Pierron, Plymouth, was re-elected president of the Sheboygan County Beekeepers' Association at the annual meeting November 5 in the city hall at Plymouth, Wisconsin. Other officers re-elected are as

follows: John Lubbers, Cedar Grove, vice-president; Harold Wentz, Sheboygan Falls, secretary-treasurer; and A. Kiltmeyer, Kiel, director for a three-year term.

Discussion at the meeting centered about the marketing of honey with County Agent, Glen Lycan as the main speaker. A committee consisting of Jac Weigand, C. Brickbauer and Paul Thomas was named to give further thought to the matter.

H. C. Brunner,
Wisconsin.

— o —

Wisconsin Loses Charles Stauss and George Schieber

Charles W. Stauss, 78, pioneer Elkhart Lake, Wisconsin beekeeper, died November 13 in a Sheboygan hospital, following a three week's illness. Mr. Stauss, who started his bee raising activities more than 50 years ago, is survived by his wife, seven children, 22 grandchildren and two great grandchildren.

George Schieber, 84, retired beekeeper, died November 20 at the home of his daughter in Stratford, Wisconsin. Mr. Schieber, who was born in Germany, had been engaged in beekeeping for 18 years before his retirement three years ago. He is survived by four children.

H. C. Brunner,
Wisconsin.

— o —

Regional Laboratories

The Farm Chemurgic Council is doing much valuable work in the study of uses for agricultural products in industries. It is one of the most outstanding movements to increase the wealth of the country that has been initiated for years. One of the leading spirits of the Farm Chemurgic Council is Dr. Harry E. Barnard, who was the first president and one of the founders of American Honey Institute.

Recent information from the Chemurgic Council is that four outstanding scientists of the Department of Agriculture have been named as directors of four regional laboratories now being established by the Department for the study of industrial uses of surplus farm crops. This is one of the outcomes of the creative work of the Farm Chemurgic Council.

The assignments are as follows: O. E. May, for the Northern Laboratory at Peoria, Illinois; Dr. F. J. Lynch, for the Southern Laboratory at New Orleans, Louisiana; P. A. Wells, for the Eastern Laboratory in Philadelphia; and T. L. Swenson for the Western Laboratory in the San Francisco Bay area. The appointments were announced by Dr. Henry G. Knight, chief of the Bureau of Chemistry and Soils. Dr. Knight,

BRAZOS VALLEY APIARIES
CAMERON, TEXAS

PACKAGE BEES

Your choice of queens

Italian, Caucasian, Carniolan

Queens reared in yards several miles apart insuring no cross breeding. Each race from the very best pure stock obtainable. Extensive experience in loading trucks quickly. A quarter of a century of efficient service in the same locality is our record.

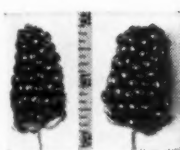
My motto through the years: I will expect to do business with you again.

| | | |
|---|---------------|---------------|
| 2-lb. package bees with young select laying queen | 1-49 | 50 or more |
| | \$2.00 | \$1.75 |
| 3-lb. package bees with young select laying queen | 2.60 | 2.35 |

"YOU CAN PAY MORE BUT YOU CANNOT GET BETTER BEES OR FAIRER TREATMENT"

H. E. GRAHAM

CAMERON, TEXAS



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Berries Mean Extra Profits

Beekeepers make a **double** profit on berry plantings. Berry blossoms make excellent honey and they are profitable in themselves. One grower made \$1,185.00 from 1,800 Boysenberry plants last summer. Write now for our **FREE** valuable Berry Booklet which contains complete descriptions of all the best varieties and full, practical planting and growing instructions.

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BUENA PARK, CALIFORNIA

**When Writing Our Advertisers,
Please Mention the Bee Journal.**

We Offer You--

- Good strains of honey producing bees.
- Good queens, produced by careful men of long experience.
- Packages well filled with young bees. No drones.
- Service that is the best. Plenty of experienced dependable help.
- Express that is fast over direct lines to the North, East or West.

ITALIANS-CAUCASIANS

| | |
|--------------------------|--------------------|
| 2-lb. package with queen | \$2.45 each |
| 3-lb. package with queen | 3.15 each |
| Queens, select laying | .75 each |

For prices on lots of 50 or more write, also for prices on nuclei.

WEAVER APIARIES

NAVASOTA, TEXAS

assisted by the Dr. H. T. Herrick, will direct the entire research program.

We have always been of the opinion that beekeepers should be much interested in the work of the Farm Chemurgic Council because honey lends itself admirably to industrial uses and there may be many uses to which it could be adapted if sufficient thought were given to it. It is already used in ways that are significant: in curing leather for making gloves; as an ingredient in poster paste; for the resilient center of golf balls; and for curing pipe bowls. Its use has been suggested as a possibility in the rayon industry.

There are doubtless many food products in which honey would have a decidedly helpful place if it were known through research just what use to make of it. Beekeepers should follow the work of the Farm Chemurgic Council and if they are in the vicinity of these new laboratories perhaps discussion of the problems of the beekeeper with the

directors will, in time, result in much that will be helpful in broadening the market for honey.

— o —

North Carolina Activities

Three types of foulbrood, the American, the European and para-foulbrood, have been identified as existing in thirty-five counties of North Carolina, according to Director I. O. Schaub, of the North Carolina Agricultural Extension Service. Discussing this problem of apiarists in his state, in his annual report of the extension service activities for last year, Director Schaub says that in some areas these diseases have caused serious losses by killing bees and weakening the colonies until they either died out or were robbed by other colonies. This robbing, he points out, caused a further spread of the trouble.

To combat foulbrood, disease control methods were discussed at thirty-eight meetings held throughout the

state under the sponsorship of the extension service. Measures advocated were adopted by 267 farmers to 4,272 colonies. The protected colonies were saved from an estimated loss of \$20,000 and Director Schaub also estimated that had these colonies been neglected and allowed to infect additional colonies another \$20,000 loss would have been suffered.

The director's annual report indicates that honey production in North Carolina was placed on a surer foundation than in years by the attention given to the problems of the beekeepers by the college specialist who devoted his entire time to the work.

The beekeeping program was divided into four phases; preparing colonies for the harvest period, the harvest period itself, disease control and marketing.

"Bees must be given good care through the fall, winter and spring," says the report, "so that the colony will be strong at the beginning of



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POSTPAID \$1.50

"She-Suits-Me" Queens

Light-3-banded stock, line-bred for 26 years. None better. One queen 75 cents, 3 for \$2.00 after May 31. Write for prices on quantity lots. Stamps accepted for single queen orders. Season begins May 20.

ALLEN LATHAM
Norwichtown, Conn.

Did you ever try the SAFIN cage for introducing your queens? 15c postpaid, 10 for \$1.00.

The koolairy veil will always be used when once tried. The easiest, most comfortable veil ever contrived.

Honey Bee Apiaries

SANDWICH, ILL.

Package Bees, Italian or Caucasians

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3-lb. package with queen.....3.15
4-lb. package with queen.....4.85
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Economy Package Bees and Queens

Sturdy Italian from Selected Stock

We guarantee date shipment, quality, weight (all loss replaced or refunded.) Prices quoted on request.

NEAL'S APIARY



HAMBURG, LA.

honeyflow. Apiarists were therefore urged to see that their colonies had good queens and at least 45 to 50 pounds of winter food stores for each hive. On this subject of fall management and re-queening 53 meetings and demonstrations were held. As a result 307 farmers in 56 counties introduced 6,000 new queens into their hives."

Along with honeyflow management swarm control was discussed at 82 meetings by extension service workers. Beekeepers were also urged to provide modern hives for all colonies, "since five or six times as much honey will be secured from a modern hive as from the old-fashioned box hive or gum."

"And with skilful management," continues the report, "an even greater difference in production is noted. The average production for gums was 6½ pounds per colony, while 1,538 colonies in modern hives, which were especially well managed, averaged 97½ pounds per colony." During the year 372 farmers transferred 2,306 colonies to modern hives.

The 4,257 colonies owned by 189 demonstration apiarists averaged 51 pounds each. This honey at 15 cents a pound brought a cash income of \$32,450 or \$171.69 per farmer. In Guilford county 27 good colonies averaged 180 pounds each while the average production for all colonies in North Carolina was 28 pounds each.

In marketing their products North Carolina apiarists find little trouble to place their wares, says Director Schaub. Those who adopted recommended methods of harvesting and packing their honey were able to secure a higher price. Some 125 farmers who followed these recommendations got around \$5,000 more, he says, "than if they had sold honey in old lard cans or other unsuitable containers."

H. H. Slawson,
Illinois.

— o —

A Honey Tea

The Ladies' Auxiliary of the Texas Beekeepers' Association, in observance of Texas Honey Week, held a Honey Tea on October 27 at the small auditorium of the Express Publishing Company, San Antonio. The Hallowe'en motif was used in the decoration, and tea and punch sweetened with honey, honey cookies and sandwiches with a honey filling were served to about seventy-five guests. A small exhibit of various ways to use honey in foods was on display.

Mrs. I. F. Aten,
Secretary-Treasurer.

J. G. Rossman, Moultrie, Ga

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of imported strain that are long lived, hardy and vigorous, and therefore can store more honey than the average strain. The brood nest is always compact and well kept, having less open, unused space.

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| 2-lbs. with queen | \$2.45 |
| 3-lbs. with queen | 3.15 |
| Queen | .75 |

No extra charge for loose queens, but they must be specified and orders placed twenty days before shipping date to insure them.

Also nuclei and domestic stock.

Discounts

| | Up to \$50 | Net |
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| \$250 to \$500 | 15% | |
| \$500 to \$1000 | 20% | |
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Write for circular with complete prices and our guarantee on prompt shipments.

TREAT YOURSELF TO THE BEST WITH

KNIGHT'S

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They are the best honey gatherers, the best winterers and reasonably gentle.

| | |
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| 2-lb. packages including queens | \$2.45 |
| 3-lb. packages including queens | 3.15 |
| 4-lb. packages including queens | 3.85 |
| 5-lb. packages including queens | 4.55 |

For queenless packages, deduct 75c.

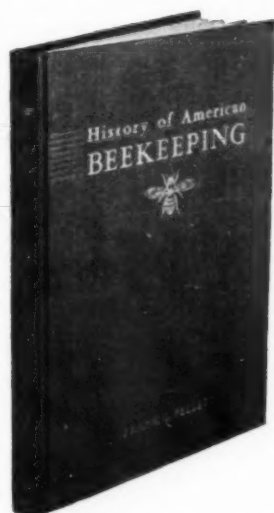
Write for delivered prices via parcel post.

QUEENS

Guaranteed mated pure, select, 75c. No charge for clipping.

15% discount to dealers. Full weight with young bees.

Jasper Knight
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By Frank C. Pellett

This is the only history of beekeeping in America, the only book of its kind in the world, really; for nothing similar has been done for any other beekeeping movement anywhere.

"It is without a doubt the most valuable contribution to beekeeping in years."

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Many years a beekeeper, inspector and instructor in Ontario and fourteen years a shipper in Georgia, we offer you the benefit of thoughtful experience.

We have again increased our colonies and they are in splendid condition to give you plenty of vigorous young bees. They are three-banded Italians, and the queens will be of the best stock, productive and gentle, reared by our queen breeder who is one of the best and most careful in the country.

Our new method of shipping greatly reduces shipping losses and supersedure. Many kind letters from satisfied customers testify to this.

Write for our booklet which tells all about it.

| Quantity | PRICES | | |
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| | Two's with Queens each | Additional Pounds each | Queens each |
| 1-11 | \$2.45 | 70c | 75c |
| 12-49 | \$2.30 | 65c | 70c |
| 50-99 | \$2.15 | 60c | 65c |
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Safe Arrival and Satisfaction Guaranteed.

MORLEY PETTIT, Albany, Ga., U. S. A.

WHAT Caucasian Bees are doing for many others, why not you? Increasing their honey production from 30 to 40%. Long-tongued, extra gentle, prolific, hardy dependable workers and winter in the north like their own country. Disease resistant. Full weight packages and safe arrival guaranteed. Prices 2-lb. package with queen **\$2.45**; 3-lb. package with queen **\$3.15**. 15% discount to dealers.

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THREE REASONS!

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PACKAGE BEES AND QUEENS

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Low first cost. Write for price list.

High in honey production. Reared in our own interests as honey producers in three Western states.

Responsible and careful shippers. Best method of packaging insures maximum of live bees on arrival. NOT ONE CLAIM for package replacement in last three years.

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FIGURE THE DISCOUNT

6% on \$10.00 orders. 8% on \$50.00 orders. 10% on \$100.00 orders. 20% to recognized dealers. Additional Discount 5% on orders booked 30 days in advance of shipping date.

PRICES:

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|-------------------------------------|-------------|
| Select laying Italian queens | \$.80 each |
| 2-lb. pkg. of bees with queen | 2.60 each |
| 3-lb. pkg. of bees with queen | 3.35 each |
| Queen loose packages 15c each extra | |

Best Quality and Service. Live Delivery and Satisfaction Guaranteed.
Order direct from this ad.

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JACKSON, ALABAMA

Eastern Blue Curls

Pellett's observation in his American Honey Plants that our eastern blue curls (*Trichostema dichotomum*) is "nowhere important as a source of surplus" is no doubt true, because it is rarely present in quantities sufficient to assure that happy state of affairs. It does not grow naturally in my locality, so I cannot speak from that standpoint, but from observations in experimental plantings, where it has been a special attraction for the bees during summer and autumn, I should be much surprised if it did not prove to be a good source of nectar where the plant is plentiful.

It grows naturally, so the florists tell us, in sandy fields from Maine to Kentucky and Missouri southward, producing its small, peculiar, two-lipped, blue or pink flowers from July onward. Being an annual of easy disposition, it would likely pay the small beekeeper to experiment with the plant as a catch crop to carry his few colonies over periods of stress or to fill in between the periods of ample honeyflow.

C. W. Wood, Michigan.

—ABJ—

Automobiles vs. Honey

It's quite a long time ago, that year when the number of automobiles in use reached and passed the million mark. Presently sales began to fall off. People said that was the beginning of the end, that the saturation point had been reached. Some manufacturers agreed. Others, seeing many millions of families still without automobiles, argued that if the price were reduced a certain proportion of them would buy. And so it was done, and they did buy—and buy—and buy. The present number of automobiles in use in this country is thirty million.

There came also a time when sales of honey were observed to be falling off. No one could believe that the saturation point had been reached, for the whole amount provided an average of little more than one pound per year for each individual. But they agreed that nothing could be done about it because they did not see how prices could be reduced.

It is a matter of record that when automobile manufacturers decided to reduce their prices they did not know how it could be done. They knew only that it must be done if their business were to continue its growth. They did it by reducing costs in production. At the same time they improved quality, raised wages, and increased their own profits.

There was an old copy book maxim that said: "What man has done, man can do." There is still truth in it.

Walter H. Hull,
North Carolina.

Counter Attack

The tomato grower had hired an airplane to dust poison on his crop, instead of spraying it in the usual way. Tomato spray did not bother old John Hasher, whose bees would have nothing to do with tomatoes under any circumstances. But at every turn of the plane clouds of poison dust fell on the clover in adjoining fields, and against this menace neither John nor his bees had any protection. John protested to the tomato grower, only to be laughed at and told to bring proof that poison from that particular plane had killed his bees.

"The clover wasn't poisoned anyway," said the tomato grower.

"My bees say different," countered old John.

"Well, then, it's them against me. And who'd take a bee's word against the word of a man?"

"Most anybody would," said John. But the other man laughed again.

That night, the weather being cloudy, John concealed a hive of bees near the tomato grower's house, sprinkled honey about to attract robber bees, and in the morning called the grower out. A bee sizzled past them.

"Git 'im away!" said the tomato man.

"Why, the little rascal don't mean no harm."

Just then the bee swung closer. "He does mean harm."

"How do you know? You can't read a bee's mind?"

"I can tell by his actions!"

"You mean his actions tell you—that he's talkin' to you with his actions—tellin' you he means harm?"

"Yes—yes!"

"But I say there's nothing to it," drawled old John. "And who'd take a bee's word against the word of a man?"

Walter H. Hull,
North Carolina.

ABJ

Proposed Milwaukee Tax

With Milwaukee seeking enabling legislation to permit the city to grant tax exemption on the first \$4,000 valuation of homesteads and to impose a 2 per cent sales tax to offset the revenue loss, indications are that some form of sales tax will be enacted by the state legislature which convened at Madison, January 11.

The proposed Milwaukee sales tax, patterned after ordinances now in effect in New York City, New Orleans, and Philadelphia, would authorize the council to impose a 2 per cent tax on the gross receipts from all retail sales of "tangible personal property, no matter where delivered."

Whether or not food, including honey, will be exempt from such a tax has not yet been determined.

H. C. Brunner, Wisconsin.

JENSEN'S PACKAGE BEES AND QUEENS

Again we would say ORDER EARLY ENOUGH that we might include your requirements in our plans. Inquiries and orders already placed indicate increased interest in package bees in 1939. We have the bees, equipment, facilities, and experienced men who know the business, and are interested in upholding our reputation for QUALITY, SERVICE, and FAIR DEALINGS. Whether your order is for one package or a thousand, we will give it our best. Don't be fooled by low prices, a few cents can make a whale of a difference.

We submit the following prices and solicit your orders on a Merit Basis. Join our throng of satisfied customers.

| 2-lb. Packages with Queens | 3-lb. Packages with Queens | Queens |
|----------------------------|----------------------------|--------------------|
| 1- 10 ----- \$2.45 | \$3.15 | 1- 25 ----- \$.75 |
| 11- 50 ----- 2.25 | 2.95 | 26-100 ----- .70 |
| 51-100 ----- 2.10 | 2.80 | Over 100 ----- .65 |
| 101-500 ----- 1.95 | 2.65 | |

For queenless packages deduct price of queens. Additional pounds of bees add 70c per pound. Two and three frame nuclei, prices upon application.

JENSEN'S APIARY CO., MACON, MISS.

Southern Poultry & Small Stock

Twenty-five cents a year

Brochures:
Me and Pa in Florida.
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Fifteen cents each. Choice two for
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editions.
CLUTTER PUBLICATIONS, Orlando, Florida

ITALIAN BEES & QUEENS

Service and Quality Guaranteed
Queens untested \$.75 Tested \$1.50
2-lb package with young queen \$2.45
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15% Discount to Dealers
LITTLE BROS. APIARIES
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You have a better opportunity to make money by starting with young, vigorous, healthy PACKAGE BEES

The kind you can expect to build up to strong colonies in time for the main honeyflow. With Citronelle Bee Company Package Bees you get the right start to good colonies and good profits.

Via Express Collect

| With Untested Queen | Queenless |
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| 2-lb. bees \$2.45 | \$1.70 |
| 3-lb. bees 3.15 | 2.40 |
| 4-lb. bees 3.85 | 3.10 |
| 5-lb. bees 4.55 | 3.80 |

Young laying Italian Queen 75c postpaid; Tested Italian Queen \$1.50 postpaid. 15% dealers' discount or for resale.

Send your order now. No deposit required

CITRONELLE BEE CO., Citronelle, Ala.

Package Bees and Queens

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| 2-lb. package with queen | \$2.45 | Write for Prices on 5 or More |
| 3-lb. package with queen | 3.15 | |
| Queens, young laying | .75 | |

SUN KIST BEE COMPANY

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SUCCESSFUL BEEKEEPERS

Who Demand **QUALITY** and **DELIVERY** ON
TIME Buy Our

GOLDEN BEES

Large, gentle, and Super-Productive!
Original Italian stock but improved and
bred up over a long period of years. Every queen
is young powerfully productive, and personally reared

Queens 75c each postpaid. 2-lb. package with Queen \$2.45.
3-Lb. package with queen \$3.15. Quantity discount to dealers.

Spoerri Apiaries, St. Bernard, P. O., Louisiana



Honey Jars
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AVAILABLE IN THE FOLLOWING SIZES

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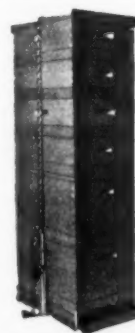


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Crop and Market Report

Compiled by M. G. Dadant

For our March report, we asked reporters to answer the following questions:

1. How much of the 1938 crop remaining in your territory?
2. What are buyers offering for good white honey, carlots f. o. b. producers' station?
3. Any comb honey left? What is price to grocers per case?
4. How is honey selling?
5. How is winter so far for bees? For honey plants?

Crop Left

As previously indicated in this market page, the crop has been cleaning up readily throughout the East and the South. It might be said that the crop is cleaning up in all sections which do not have heavy commercial production. Even some of the commercial producing areas like those in Texas, Georgia, Florida, etc. have cleared up their stock of honey in relatively good fashion.

Putting it roughly, the sweet clover areas are the areas that are suffering this year from a holdover of honey at this date. Outside of New York and perhaps Pennsylvania, all the rest of the East reports local honey stocks down to normal and the same will hold good throughout the entire Southeast and South.

In the Central West, however, beginning with Ohio and extending into the Rocky Mountain area, stocks of honey still on hand are above normal, ranging all the way from 10 per cent to 50 per cent of the total production of last year. We believe that the western coast is in a little better shape, the amount of stock perhaps running about 20 per cent of the production. This is likely due to the fact that there are more possibilities of export markets and shipments to New York at a moderate price. Perhaps, also, California has been used to a little lower price on honey than central regions and, therefore, have felt themselves at less disadvantage this year.

Buyers Offering

The offerings from buyers during January were very short, indeed, most buyers preferring to take honey as they needed it and waiting for the sacrifice lots. However, recently there seems to have been a little better buying although prices are unusually low. The usual price offered is about 5 cents delivered. One party reports selling at 5½ cents delivered central western point and another being offered 5½ cents delivered New York. Another party suggests 5 cents delivered Kansas City for western honey. This gives a relatively short picture of the offerings.

In the Canadian provinces, the prices range from about 5½ cents f. o. b. shipping point in Ontario, 6 cents in Manitoba, 6½ to 7 cents in Saskatchewan and about 8 to 8½ cents in British Columbia which just about compensates for the difference in freight rates.

Comb Honey on Hand

Primarily comb honey is relatively well disposed of. In fact, we believe with comb honey it is entirely a case of distribution rather than production as many sections have been clamoring for comb honey whereas in others it has been hard to sell. We learn of sales of comb honey at \$2.50 per case or as low as \$2.00 where the buyer furnishes the cases himself. All in all, however, the

amount of comb honey on hand is comparatively small and will undoubtedly be disposed of.

Honey Selling

Throughout the East, honey is selling from fair to good and the Southeast and South at least fair and in many cases good. In fact we believe that no section of the country can report that honey is selling slowly. The low prices undoubtedly are inducing purchases although present conditions are not conducive to very heavy demand. In fact the predictions of much better conditions in January and February have not turned out as well as had been expected and naturally the consumer demand has had to be cut by the amount of money available for purchase of such products.

Wintering Conditions

Throughout all sections of the country, bees seem to be wintering well. The weather has perhaps been a little warmer than usual through the central western areas and there is a possibility that bees will have consumed their stores more than usual so that there will be a possibility of starvation. Outside of this, however, undoubtedly colonies have wintered satisfactorily and on flight days very little loss of the colony entirely has been noticed.

The writer thinks that this year at this date there has perhaps been a greater unanimity of opinion as to the condition of colonies of bees than has been the case for a good many years.

The same thing holds true for honey plants. Fairly good moisture conditions and coverings of snow throughout the entire north section have made for desirable conditions with honey plants inasmuch as there were sufficient rains last fall to induce the growth of young plants.

There seems to be a dry area still persisting in the plains area, particularly in Nebraska and Kansas and extending down into Oklahoma and western Texas. The same conditions also prevail farther west into New Mexico and Arizona.

In the South, while plant conditions are normal or better, there seems to be a little fear that the bees will be breeding up too early with the moderate weather and there may be a setback in bees and in honey plants a little later on.

Summary

All in all, in view of the extremely heavy crop in the sweet clover regions and extending into the inter-mountain region, there seems no doubt but that there will be a considerable carry over of honey into the new crop year. Of course numbers of beekeepers are making sacrifice sales now rather than carry the crop over. It does look, however, like the consumption of honey has been at least normal this year and no doubt but that the earlier reports in some sources that the crop was not nearly as large as had been anticipated, have proved to be a mirage. While the crop could not be considered a bumper crop, yet it was so much better than has been gathered throughout the central western areas for a good many years, naturally there should be an excess of honey.

While conditions in the honey game might be better, yet they might be considerably worse and we know that there are plenty of beekeepers who are encouraged to expand the coming year. Others can produce at low figures and be satisfied.

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The Postscript

Gossip About the Office in the Making of the Magazine

E. M. Cole takes exception to Phillips' estimate of Dr. Miller in the December Postscript. He says that the truth is that Miller was a born inventor and took mild pride in the fact, as will be seen by reading his "Fifty Years Among the Bees," (1911 edition) page 88.

"The Miller feeder and the Miller introducing cage have become standard articles in the price lists, while bottom starters, the robber-cloth, bottom board and some other things have had from my brother beekeepers a reception of which I have no reason to complain."

—ABJ—

This argument was started by my estimate of Dr. Miller in "History of American Beekeeping" where it is said that he was known for his genial personality and his ability to impart enthusiasm to his readers rather than as a discoverer, an inventor or a pioneer. By this I meant that he contributed no revolutionary discovery such as Langstroth's invention of the bee space or Hruschka's extractor. While Miller did bring forward numerous minor articles such as those mentioned they were not such as to bring about fundamental changes in honey production.,

—ABJ—

Cole says further: "The facts are that hardly one piece of equipment that the Doctor used was standard. The nearest standard was the hive body, which for him required an extra piece nailed on each end to strengthen the rabbet, and this in turn forced him to use a cover not standard. As to frames, he remarks, page 84, 'Not finding anything on the market to suit me I was in a manner compelled to adopt something of my own get-up, the Miller frame.' His two inch deep bottom board, his hive dummy and comb honey super were certainly not standard equipment sold by every supply dealer."

—ABJ—

Edmond Fontaine, of Ruxton, Maryland, would like to exchange his apiaries for property elsewhere. He says that he has beat American foulbrood with selected native grade bees and after seven years has a resistant stock. Fontaine is a bachelor and plans to travel around a bit.

—ABJ—

In a letter received this morning is a clipping from the Baltimore Sun commenting upon the effect of bee stings. The letter suggests that editors are usually anxious to get matter of local interest and that hundreds of letters about bees would be used if sent in by the beemen.

—ABJ—

This same correspondent remarks that Caucasian bees build up two weeks ahead of the Italians in spring and are accordingly much better for regions where the crop comes early.

In most cases where comparison has been made of the races to the disadvantage of the Caucasians it has been in localities where the crop comes in mid-summer or later. It seems very reasonable that the Caucasians may get a bigger crop from an early source like the tulip poplar.

—ABJ—

A Memphis, Tennessee, paper has an interesting story of a cotton planter who formerly devoted five hundred acres to that crop and who now occupies himself with bees. I. F. Trevathan, Gilmore, Arkansas, is reported as having begun to take his bees seriously when cotton prices went into a tail spin with the end of the World War boom. Like many other beekeepers he got started by the accident of finding a stray swarm. Many

a beekeeper has found honey production less exacting and more satisfactory than some large scale business enterprise.

—ABJ—

A Kansas lady asks how much return can reasonably be expected from bees. Of all the questions that come to this desk, that is perhaps the most difficult to answer. So much depends upon the locality, the beekeeper and the season that no very satisfactory answer can be given. One can point out instances of high yield which might mislead the novice in expecting too much. On the other hand to point to cases of small return might discourage her unduly.

My personal experience leads to say that a return of five dollars per hive can reasonably be expected with proper management. Some get more and some less but I would like to know whether my readers agree with that figure as a reasonable one.

—ABJ—

On frequent occasions some mention is made of a possible slogan for the beekeeper. John Conner, New Jersey, suggests that maybe someone can add something to the words, "Naturally Better," to serve that purpose. Always we keep hoping that somebody will get an inspiration which will express all the merits of honey in a single sentence with enough punch to ring the bell.

—ABJ—

From Missouri comes the question as to how to separate the honey from the wax with combs cut from bee trees. Can anybody suggest a better method than the old time one of mashing the combs in clean flour sacks and hanging them up to drain out? That certainly is a messy and unsatisfactory method but combs cut from bee trees are likely to be messy at best.

—ABJ—

Since tung trees have been so generally planted in Florida and along the Gulf Coast, the question is often asked as to whether the honeybee is important in the pollination of the bloom. The pollen bearing flowers and the nut producing bloom are formed separately on the same tree. While many nut trees are wind pollinated the pollen of the tung tree is carried by insects. Since the trees are now planted in large groves, in some cases thousands of acres, it is hardly probable that the wild bees will be present in sufficient numbers to insure proper pollination. Tung yields but little if any nectar and hence is not attractive to the beekeeper as a source of pasture.

—ABJ—

Few people appreciate how many different kinds of wild bees are present in the average community. Since they are often few in numbers of individuals their presence is overlooked by those who should be most interested in their preservation for service in the pollination of flowers. Charles Robertson found 296 species of bees within ten miles of Carlinville, Illinois. 231 species are known to occur in Connecticut and 250 in New Jersey. It is only when these wild bees disappear that the public is likely to become fully conscious of the part the honeybee plays in flower fertilization.

—ABJ—

In a catalog of seeds that comes to my desk from Germany I note with interest that sorghum is called "honigras." Honey grass appears like a very appropriate name for the sorghum plant but it is new to me.

FRANK C. PELLETT.